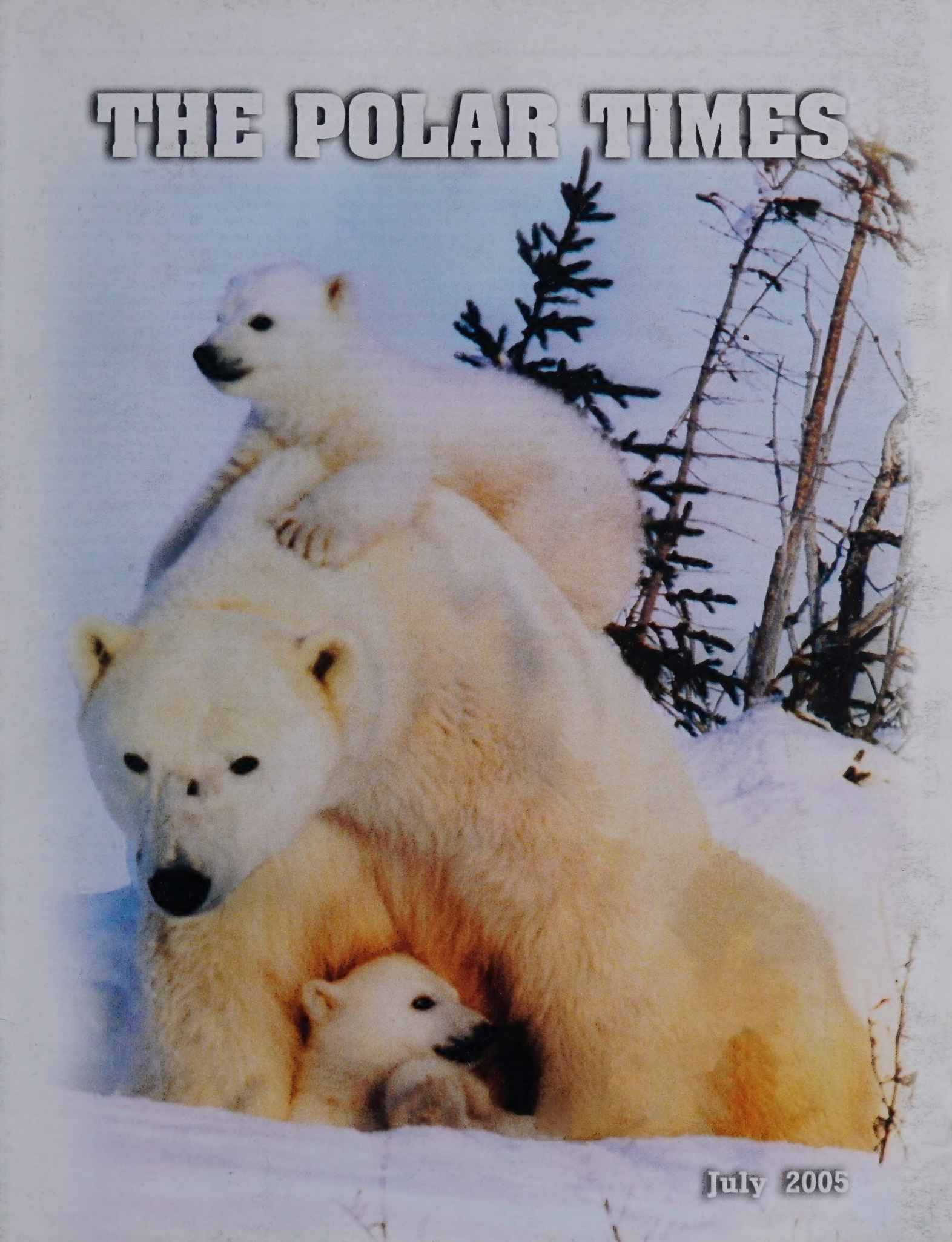
THE POLAR TIMES



July 2005

Mamas, Don't Let Your Babies Grow Up to Be Camera-Shy!

By Fran Bayless, Cover Photographer

It all started several years ago on a trip to Antarctica, when I mentioned to another photographer that you seldom see images of the mother polar bears and their cubs. That photographer knew the ropes, so to speak, to make the arrangements [for a photo-taking trip), which would begin in Churchill, Manitoba, Canada. Now, after making the trip [March 2–11, 2005], I understand why these images are so rare.

Our contact was to be Mike Spence—mayor of Churchill, Cree Indian and native to land—and his lovely wife Laureen.

The female polar bears den on the native lands of the Cree Indians, including along the trap lines used by Mike's father. The area is adjacent to the new Wapusk (the Cree word for White Bear National Park).

I contacted Laureen and Mike, who, along with Mike's brother Morris, own the Watchee lodge where we would be going

The lodge was built and used by the Canadian and U.S. navies during WWII as a communications base. After the war, the lodge was abandoned, then claimed and renovated by the Mike and Morris. They named the lodge *Watchee*, which in the Cree language means "a hill covered with trees in the middle of the tundra."

Each February and March, they invite several persons, mostly photographers, to visit the lodge and hopefully see a mom bear with her cubs. Due to the weather and possible adverse conditions, there are no guarantees that you will see bears. (For more information, search on Yahoo for "Watchee Lodge.")

To find the lodge, we first flew into Churchill and then took the tri-weekly night train to a designated snow bank. There, Mike and one of the guides met us. The drive from the train tracks to the lodge was a little more than half an hour.

The accommodations were very nice if you enjoy the rugged life. The food was excellent; our care could not have been improved; and Mike Spence and the helper guides continued to take excellent care of us while we were out with the bears.

The trackers, led by Morris, would leave early morning, and we would follow around 9:30 a.m., after a more than adequate breakfast. If and when the trackers found a bear, we would be notified over the radio to follow their GPS directions. This usually meant a two-hour drive over snow and ice from the lodge. A warming lunch of hot soup or stew and sandwiches was served on the tundra at noon.

The photographing distance was a minimum of 100 meters, for several reasons. We did not want to be an intrusion into the bears' environment; a mother bear is able to move extremely rapidly. It was definitely a wait -and-watch situation, hoping for the bears to show any activity. Sometimes we would get to watch the bear and her cubs for half an hour, other times for just a precious few moments.

In 12 days we saw four mothers, each having two cubs, and one mother still in the den with her babies. It was a thrill to see the mom and babies peek out of the den, knowing that soon the cubs would be old enough (three months) to start their journey to the sea ice and hunt for seals.

The weather was our biggest concern. We had two snow storms that kept us inside for three days each. On bear days, the temperature was usually 55°F below zero, although we had one warmer day. Because the bears keep their backs to the wind, we were always facing into the wind, which blew 90 percent of the time. After an hour or so, we had snow and ice crystals all round our faces.

I am blessed with excellent equipment. I used Leica cameras and lenses. Being so far way, I used the LeicaR9 camera body with an 800 lens and 160-speed Kodak Portra UC film. My cameras and lenses worked to perfection. The handles on my tripod, however, froze, which added one more dimension to the adventure.

Observing the mom polar bears with their cubs was an experience to behold. The females are excellent mothers, keeping their babies right beside them, awake or asleep. The babies play all over the mother like a jungle gym. When mom has had enough, she will gently pull the cubs into her, using her huge paw, or gather them up and be on her way.

Hard work was required to locate and photograph these beautiful animals. It was a rugged trip; but every moment with the bears and cubs is a treasure to me, and it is my pleasure to share these images. Hopefully they will inspire folks of all ages to learn more about and appreciate the life of the magnificent and beautiful polar bear. ❑

Fran Bayless took the photographs for our front and back covers, as well as the photo on this page. To enjoy more of Fran Bayless' photographs, visit her web site at "www.worldnaturephotos.net". Tom Bayless, the photographer's husband, says of the bear-sighting trip: "The weather was very cold—55°F to -65°F. It was the coldest experience Fran and I have had, and that includes Antarctica in 1999 when we camped in tents on the Ice in late November, and our tents never were above –22°F for 19 days of camping."

PHOTO BY FRAN BAYLESS

The President's Letter

As the schedule arrives to draft another President's Letter, I get this pit-of-the-stomach feeling that I had more than half a century ago in English classes in high school and college. What can I possibly say that will be of interest and afford at least a "C" grade? As Yogi said, "It's déjà vu all over again!" Well, the quality of writing may not have improved, but this time a colleague and APS member provided the inspiration for something of great interest to me, and I am pleased to bring it to your attention. Rather than compose a separate section on the event, I have included it in my letter to members.

In addition, APS has developed a membership incentive for "gifting," mentioned elsewhere in the Membership letter by Charles Lagerbom. He will also tell you that we have become more official, now that a cloth patch is available with the APS logo on it (for sale, of course). (There has even been talk of an APS T-shirt for the future.)

A third subject is that of International Polar Year 2007-08, presently a hot topic, with committees and sub-committees working on issues proposed for study during this important era in polar history. The fourth subject to relate has to do with some progress made on a Symposium of the type that APS has held in the past, the last at BPRC, Ohio State University, Columbus, in October 2003.

APS is not necessarily obligated by our Constitution or Bylaws to meet on a regular basis, but it helps to see each other from time to time to trade war stories, hold a meeting of the Board of Governors in person rather than by email/telephone, move into a period of elections for officers, honor polar dignitaries with medal awards at a formal banquet and also to present topical polar issues in a formal symposium agenda. The third and fourth subjects blend together a bit because I have made inquiries about a location and a date for the next Symposium and in return have received a positive response from one organization that raised the theme of the IPY in the program theme. The timing would be right, and a program that would include something about the Polar Years in an historical sense, plus a technical program at the general public level, would make sense. The more I read on IPY 2007-08, the more it becomes apparent that the period of basic research in the IGY of 1957-58, mainly in Antarctica, has evolved into research that will also include the social sciences, as well as emphasize applications, which is really what taxpayers are most sensitive about. For more on IPY, see *http://www.ipy.org*. The year proposed for a Symposium is 2006, although that could move into 2007, depending on the usual factors that need to be determined for a two- to three-day meeting, as field trips/excursions were also mentioned in this regard. More on this as developments continue.

Last but not least, it is a pleasure to mention that one of our members, Lonnie Thompson, continues to collect awards and honors much as an Olympic champion, the most recent in April 2005. I was alerted to this fact by a spacious announcement in the 12 April 2005 issue of *Eos, Transactions of the American Geophysical Union*, with type an inch high, "2005 Tyler Prize," followed by the names of two prominent scientists who are recipients—Charles David Keeling and Lonnie G. Thompson. Keeling is a name that everyone knows by now as a monitor of carbon dioxide in the atmosphere for many decades and its interpretation. Details on the award for Lonnie can be found in a press release from Ohio State University, where Lonnie is a Professor of Geological Sciences and senior research scientist with the Byrd Polar Research Center. Lonnie has become one of the world's authorities on the melting of glaciers and ice caps as a warning of rising global temperatures, surprising the scientific community in 2000 by predicting that the vast ice cap atop Mount Kilimanjaro is likely to melt within 15 years. It is well known that Lonnie, along with his wife and research colleague Ellen Mosley-Thompson, also a Professor at The Ohio State University, has illustrated and argued that the first real evidence of an increase in global temperatures will come with the melting of tropical ice caps and glaciers. To recap his career as an "ice-man," Lonnie and his team have conducted nearly 50 expeditions to five continents, drilling ice cores and interpreting the enclosed climatic records, beginning in 1973 with one in Peru that I never learned how to spell or pronounce. Ice caps visited have been as high as 23,600 feet (7,200 meters), placing Lonnie as someone who has spent more time at elevations higher than 18,000 feet (5,500 meters) than any other human. If you have met Lonnie you will know that he is Sherpa material, physically endowed with broad shoulders and an accomplished mountaineer. Richard Alley (Penn State glaciologist) says that mountain climbers going up a mountain meet Lonnie coming down with an ice core under his arm (*Columbus Dispatch*, 30 March 2005).

The Tyler Prize for Environmental Achievement was awarded to Lonnie at a ceremony at the University of Southern California in April, amounting to half of the $200,000 designated for the award, with half going to Keeling and half to Lonnie. All right, so what does a glaciologist in mid-life do with that kind of money? The same thing he has done with past cash awards, plow it back into research, including funds he created to help graduate students and others, as well as a bonus for members of his research team. The Tyler Prize, by the way, is regarded by some as the equivalent of the Nobel Prize, and past recipients have included Jane Goodall, E.O. Wilson, C. Everett Koop, Roger R. Revell, F. Sherwood Rowland and Anne and Paul Ehrlich. I studied Lonnie's vita to gather the highlights of his distinguished career, and got lost in the 40-some pages of awards, publications, presentations, etc., but at least should mention the A.H. Heineken Prize for Environmental Science, Vega Medal, and many others listed.

So what does Lonnie do in his spare time, if he has any? On May 4, 2005, AAAS asked Lonnie and three other scientists to give presentations and spend the day one on one with U.S. Congressmen in a Climate briefing to discuss climate change issues. And when you're famous, you are tagged to give the Commencement address at Ohio State University, Winter Quarter 2004. And the topic? What else? "Lessons from the Mountains?" (P.S. I'm not finished yet.) On May 3, 2005, the National Academy of Sciences elected Lonnie to its prestigious and distinguished list of members, the ultimate honor bestowed on a scientist in the United States.

Congratulations to Lonnie as a superachiever and a name that will be remembered for many years for his research on the topic of ice-core retrieval for climatic interpretation, and the onset of global warming, a subject that affects everyone.

John Splettstoesser

President
American Polar Society

American Polar Society

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are $15 a year ($17, foreign) and entitle members to receive ***The Polar Times*** twice a year. The American Polar Society is classified as a tax exempt organization under Sec 501(C)3 of the IRS Code. For more information about the American Polar Society, contact Kevin L. Bjella, **APS Secretary,** at 1.802.295.6881 or send email to *kevin.bjella@erdc.usace.army.mil* .

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Icebreakers' Future On Thin Ice

***Seattle Post-Intelligencer*, ABOARD THE USCGC *POLAR SEA*, 21 February 2005, by Mike Barber**–Although it carries no heavy armament, this U.S. Coast Guard icebreaker is a fighting ship.

During its nearly 30 years of life, the *Polar Sea* once crushed its way to the southernmost point in Antarctica navigable by sea. Six months later it broke through to the Arctic to become the first American surface ship to reach the North Pole and the first ship to span the most extreme ends of the global ocean.

Once mainly a defense mission linked to anti-submarine warfare in World War II and the Cold War, polar icebreaking today is crucial for science missions that reach regions considered harbingers of changes to come to the rest of the planet.

But the 399-foot *Polar Sea* and its sister ship, the *Polar Star*, both based in Seattle, are nearing the end of their service lives. The costs to maintain them are rising, and nothing is on the drawing board to replace them.

> *Like an exhausted heavyweight,* Polar Sea *did not answer the bell this winter for another round with Antarctica.*

What's more, some inside the federal government wonder whether icebreaking will remain a mission of the Coast Guard, which has become a key link in homeland security since 9/11. Some speculate that the program could be cut or transferred to another agency.

Like an exhausted heavyweight, *Polar Sea* did not answer the bell this winter for another round with Antarctica. With its main motors shot and other repairs being assessed, the ship was deemed "mission incapable" and sent to Todd Shipyards in Elliott Bay for long-overdue repairs. It isn't expected to be back in service until November 2006.

"This has been a tremendously difficult project because they have never been opened in their 25 years of life," the *Polar Sea*'s skipper, Capt. Bruce Toney, said of the vessel's motors. "It's quite a rigging problem, which is where Todds' folks come into it."

However, "the *Polar Sea* is very much alive," Toney said. "After four consecutive trips in a row, it's simply her time" to be repaired.

The bill for these immediate repairs could range from $1 million to $10 million, said Cmdr. Tom Wojahn, ice-operations program manager at Coast Guard headquarters in Washington, D.C.

Completely renovating or replacing the icebreakers, a longer-range consideration now under study, might cost anywhere from $50 million to several hundred million, he said.

The icebreakers have been working as never before as Antarctic conditions in recent years grew so severe that sea ice normally extending 10 nautical miles from McMurdo Station grew to 80 nautical miles. Two icebreakers were needed instead of the usual approach of rotating one after the other, allowing each to recover from the punishing work that sends vibrations throughout the ship.

Since 2000, *Polar Sea* was forced by some of the harshest Antarctic conditions ever to forgo its biennial repairs and hammer open sea lanes to important science missions on the bottom of the world.

"Without those breakers, you don't have a channel in and out of McMurdo Sound. If you don't have a channel, you don't have the (49-year-old) U.S. Antarctic Program" supplied from McMurdo Station, the Coast Guard commandant, Adm. Thomas Collins, flatly told the Navy League last year.

Without the *Polar Sea* this winter, its twin, *Polar Star*, was helped by a smaller, conventionally powered 30,000-horsepower Russian icebreaker, the *Krasin*, which the National Science Foundation (NSF) hired. (The U.S. icebreaking fleet's third ship, the modern but less-powerful *Healy*, is preparing for Arctic missions. It also is based in Seattle.)

After casting off in November, the vessels began breaking ice together around Christmas. They completed a channel to McMurdo by the end of January, and a U.S. Navy tanker and a container ship laden with once-yearly supplies and millions of gallons of fuel arrived, returning with the previous year's containers laden with trash.

With their 60,000-horsepower kick, the *Polar Sea* and *Polar Star* are considered the world's most powerful non-nuclear icebreakers, capable of crushing their way through 21-foot-thick ice. Only two nuclear-powered Russian icebreakers are more powerful. Because their design relies upon the Arctic to cool the power plants, however, the Russian nuclear icebreakers can't cross the tropics to Antarctica.

Though the Coast Guard is undergoing a multibillion-dollar, 20-year program called Operation Deepwater to replace its aging ships, aircraft and equipment, the icebreakers were not included.

The Coast Guard estimates $70 million to $75 million will be needed annually for the next several years to maintain and operate the three-vessel polar icebreaking fleet.

Icebreaking was the one program in President Bush's $8.2 billion 2006 Coast Guard budget significantly changed, transferring $48 million for the icebreakers from the Coast Guard to NSF, making that agency responsible for their maintenance and operation by then repaying the Coast Guard.

The future beyond 2006 is murky, however.

"The administration's budget plan indicates that the Department of Homeland Security's priorities make it unlikely the Coast Guard could fund refurbishment or replacement of the icebreakers in future years, which in turn threatens the programs that depend on the ships' services," NSF said recently on its Web site.

"While the Coast Guard will initially continue to operate and maintain the ships, NSF will have flexibility to pursue alternatives to current operations," the science foundation said.

"The likely outcome will be continued services at a lower cost and more directly tailored to the needs of the research community."

With budget austerity as a backdrop, some Coast Guard and science observers speculate that, under the Coast Guard's new parent body, the Homeland Security Department, icebreaking could be the first "non-homeland security" mission to be cut, or at least transferred to another agency with civilian crews.

Congress last September directed Collins to contract with the National Academy of Sciences' Polar Research Board to study the U.S. polar icebreaking fleet's future and report back next September.

Among other things, the board will weigh replacing or renovating the icebreakers and "alternative methods that do not use Coast Guard icebreakers," including "the potential for new operating regimes," the directive says.

Some observers believe one such "regime" might be the National Oceanic and Atmospheric Administration.

That agency's corps of nearly 300 commissioned officers makes up the little-known seventh member of the U.S. uniformed services. Its officers, who can transfer among the other uniformed branches, command a fleet of research vessels crewed by civilians, but the agency has no icebreakers of its own.

> *...observers speculate that, under the ... Homeland Security Department, icebreaking could be the first "non-homeland security" mission to be cut.*

"Our experience and that of other nations that operate in ice-covered waters is that experience is extremely important," NSF spokeswoman Dena Headlee said.

Currently "there is no plan for any agency to take the polar icebreaking mission from the Coast Guard," said Wojahn, the head of the Coast Guard's ice operations.

"We're anticipating some major recapitalization for the *Polar Star* and *Polar Sea*" when the study is final, he said.

Collins has said the Coast Guard has the built-in history and expertise to continue polar icebreaking.

"The commandant has said that the nation needs a polar icebreaking capability and the Coast Guard is the right agency to provide this service," Wojahn said, "but it needs to be properly funded." ❑

Shift in Icebreaking Fleet Could Crunch NSF Budget

Plowing a path to polar research stations is no longer a core mission of the U.S. Coast Guard. But can the National Science Foundation afford to do the job?

***Science*, 4 March 2005, by Jeffrey Mervis**–Half a century after agreeing to help the National Science Foundation (NSF) serve up a banquet of polar research, the U.S. Coast Guard is getting up and walking away from the table. And NSF doesn't know if it can pay the bill.

NSF is responsible for U.S. science at the poles, which includes three stations in Antarctica and a growing presence in the Arctic. But it can't do its job without the Coast Guard's help in clearing the sea ice. That's a perennial need at McMurdo Station, the logistical hub for U.S. activities on the Antarctic continent. Although NSF pays for the fleet's deployment–some $12 million last year–the Coast Guard has shouldered the much greater cost of building and maintaining two aging heavy-duty icebreakers that focus on McMurdo and a newer, less powerful research icebreaker that spends most of its time in the Arctic.

But that relationship seems headed for the deep freeze. Last month the Bush Administration told Congress in its proposed 2006 budget submission that NSF would henceforth be responsible for the ships, two of which are desperately in need of major repairs or replacement after 30 years of ice-crunching. Officials at both the Coast Guard and NSF say the policy shift was presented as a fait accompli last fall during budget negotiations.

The White House has tried to sweeten the deal with a one-time transfer of $48 million to NSF from the Coast Guard. But that's less than two-thirds of the $75 million the Coast Guard estimates it will cost to maintain the ships this year. And it's little more than a down payment on a possible $600 million tab to retrofit the 30-year-old *Polar Sea* and *Polar Star*–and even more to replace them. (The *Sea* is now undergoing an extensive inspection to determine what repairs are needed, and the *Star* is slated for the same major overhaul after next winter.) Not surprisingly, NSF officials fear that the agency's new duties could eventually wreak havoc with its overall budget, which shrank by 3.2% this year and has little chance of growing significantly next year. Three panels have been convened to study the issue from all angles.

"We need to look at the whole system, both short-term and long-term, and figure out what makes the most sense," says Karl Erb, head of polar programs at NSF. But some things–none of them good–are already clear to Sridhar Anandakrishnan, a glaciologist at Pennsylvania State University, University Park, and past chair of NSF's polar science advisory committee. "It's a huge crisis," he says. "And I don't know how we can solve it without additional funding from Congress."

The Administration says NSF should foot the bill because the icebreaking fleet mainly serves the academic scientific community. What's more, enabling science is a lower priority for the Coast Guard, now part of the Department of Homeland Security, than activities such as law enforcement, search and rescue, and fostering economic development. Accordingly, this year's 2006 budget request concludes that "it is unlikely that the Coast Guard could provide funding in future years for refurbishment or replacement of the icebreakers. That, in turn, threatens the research programs that depend on their services."

PHOTO BY BRIAN BARNETT

***The U.S. Coast Guard icebreaker* Polar Star *(left) and the Navy tanker* USNS Paul Buck *at the ice pier at McMurdo Station. In the background are the Russian icebreaker* Krasin *(center), which assisted the* Polar Star *this year in breaking a channel through McMurdo Sound, and the NSF research vessel* Nathaniel B. Palmer.**

Indeed, funding lies at the heart of the problem. "We think that polar icebreaking is important," says Cmdr. Thomas Wojahn, ice operations program manager for the Coast Guard. "And we think we should continue to operate these ships. But icebreaking needs to be properly funded." Wojahn notes that soaring fuel bills, bigger repair bills, and recent extreme ice conditions in the Antarctic have boosted the cost of doing business without a commensurate rise in funding.

The new arrangement gives NSF a chance to break that vicious cycle, the White House says. Once the Coast Guard transfers responsibility for icebreaking, according to budget documents, "NSF will have flexibility to pursue alternatives to current operations." Those alternatives could include renting commercial or foreign icebreakers, as NSF did this winter to replace the *Polar Sea* (*Science*, 21 January, p. 338). A more radical approach would be to offload fuel, supplies, and other materials at a spot that remains ice-free throughout the year and then haul the materials over land. But the savings in annual icebreaking might be swamped by the cost of building a new station and extending NSF's supply lines.

Anandakrishnan agrees that it makes sense for NSF to ensure access to its research assets. But he says nobody anticipated the "perfect storm" that has built up in the past few years. "We've known for a long time that it would eventually come to the point where the Coast Guard would say, 'You want us to do this? Then find the money!' But NSF is also in a bad way, financially."

Although Congress could reverse the policy and block the transfer of funds, both the Coast Guard and NSF are proceeding on the assumption that it will take effect next year. A joint working group is drawing up a new agreement on how the three ships will be operated and maintained over the next few years, says Erb. At the same time, the National Academies' National Research Council is beginning a study of how the country's polar icebreaking fleet should be deployed, "including scenarios for continuing those operations and alternative approaches." Although the $600,000 study will run until the end of 2006, Congress has asked for an interim report by September. Finally, Erb is assembling an NSF task force to weigh the agency's long-term prospects for operating in the polar regions. He hopes the panel will "at least start to narrow down the options" in time for NSF's 2007 budget submission to the White House in September. ❑ ***(See related story, "Senators," p. 6)***

Antarctica Warming; Looks Ever More Vulnerable

The New York Times, **OVER THE ABBOTT ICE SHELF, Antarctica, 25 January 2005, by Larry Rohter**—From an airplane at 500 feet, all that is visible here is a vast white emptiness. Ahead, a chalky plain stretches as far as the eye can see, the monotony broken only by a few gentle rises and the wrinkles created when new sheets of ice form.

Under the surface of that ice, though, profound and potentially troubling changes are taking place, and at a quickened pace. With temperatures climbing in parts of Antarctica in recent years, melt water seems to be penetrating deeper and deeper into ice crevices, weakening immense and seemingly impregnable formations that have developed over thousands of years.

As a result, huge glaciers in this and other remote areas of Antarctica are thinning and ice shelves the size of American states are either disintegrating or retreating—all possible indications of global warming. Scientists from the British Antarctic Survey reported in December that in some parts of the Antarctic Peninsula hundreds of miles from here, large growths of grass are appearing in places that until recently were hidden under a frozen cloak.

"The evidence is piling up; everything fits," Dr. Robert Thomas, a glaciologist from NASA who is the lead author of a recent paper on accelerating sea-level rise, said as the Chilean Navy plane flew over the sea ice here on an unusually clear day late in November. "Around the Amundsen Sea, we have surveyed a half dozen glaciers. All are thinning, in some cases quite rapidly, and in each case, the ice shelf is also thinning."

The relationship between glaciers (essentially frozen rivers) and ice shelves (thick plates of ice protruding from the land and floating on the ocean) is complicated and not fully understood. But scientists like to compare the spot where the "tongue" of a glacier flows to sea in the form of an ice shelf to a cork in a bottle. When the ice shelf breaks up, this can allow the inland ice to accelerate its march to the sea.

"By themselves, the tongue of the glacier or the cork in the bottle do not represent that much," said Dr. Claudio Teitelboim, the director of the Center for Scientific Studies, a private Chilean institution that is the partner of the National Aeronautics and Space Administration in surveying the ice fields of Antarctica and Patagonia. "But once the cork is dislodged, the contents of the bottle flow out, and that can generate tremendous instability."

Glaciologists also know that by itself, free-floating sea ice does not raise the level of the sea, just as an ice cube in a glass of water does not cause an overflow as it melts. But glaciers are different because they rest on land, and if that vast volume of ice slides into the sea at a high rate, this adds mass to the ocean, which in turn can raise the global sea level.

Through their flights over this and other areas of Antarctica, NASA and the Chilean center hope to help glaciologists and other scientists interested in climate change understand what is taking place on the continent and why. To do that, they need to compile data not only on ice thicknesses but also the underlying geology of the region, information that is most easily obtained from the air.

The flights are taking place aboard a Chilean Navy Orion P-3 plane that has been specially equipped with sophisticated instruments. The devices include a laser-imaging system that shoots 5,000 pulses of light per second at the ground to map the ice surface, as well as ice-penetrating radar to determine the depth of the ice sheets, a magnetometer and digital cameras.

For most parts of Antarctica, reliable records go back less than 50 years, and data from satellites and overflights like the ones going on here have been collected over only the past decade or so. But that research, plus striking changes that are visible to the naked eye, all point toward the disturbance of climate patterns thought to have been in place for thousands of years.

In 1995, for instance, the Larsen A ice shelf disintegrated, followed in 1998 by the collapse of the nearby Wilkins ice shelf. Over a 35-day period early in 2002, at the end of the Southern Hemisphere summer, the Larsen B ice shelf shattered, losing more than a quarter of its total mass and setting thousands of icebergs adrift in the Weddell Sea.

> *"By themselves, the tongue of the glacier or the cork in the bottle do not represent that much. But once the cork is dislodged, the contents of the bottle flow out...."*

"The response time scale of ice dynamics is a lot shorter than we used to think it was," said Dr. Robert Bindschadler, a NASA scientist who is director of the West Antarctic Ice Sheet Initiative. "We don't know what the exact cause is, but what we observe going on today is likely to be what is also happening tomorrow."

Thus far, all of the ice shelves that have collapsed are located on the Antarctic peninsula. In reality a collection of islands, mountain ranges and glaciers, the peninsula juts northward toward Argentina and Chile and is "really getting hot, competing with the Yukon for the title of the fastest warming place on the globe," in the words of Dr. Eric Steig, a glaciologist who teaches at the University of Washington.

According to a recent study published in Geophysical Research Letters, the discharge rate of three important glaciers still remaining on the peninsula accelerated eightfold just from 2000 to 2003. "Ice is thinning at the rate of tens of meters per year" on the peninsula, with glacier elevations in some places having dropped by as much as 124 feet in six months, the study found.

But the narrow peninsula contains relatively little inland ice. Glaciologists are more concerned that they are now beginning to detect similar signs closer to the South Pole, on the main body of the continent, where ice shelves are much larger—and could contribute far more to sea level changes. Of particular interest is this remote and almost inaccessible region known as "the weak underbelly of West Antarctica," where some individual ice shelves are as large as Texas or Spain and much of the land on which they rest lies under sea level.

"This is probably the most active part of Antarctica," said Dr. Eric Rignot, a glaciologist at the Jet Propulsion Laboratory in Pasadena, Calif., and the principal author of the Geophysical Research Letters paper. "Glaciers are changing rapidly and increasingly discharging into the ocean, which contributes to sea level rise in a more significant way than any other part of Antarctica."

According to another paper, published in the journal Science in September, "the catchment regions of Amundsen Sea glaciers contain

Senators Push for Icebreakers

http://cantwell.senate.gov, WASHINGTON, 27 April 2005–U.S. Senators Maria Cantwell (D-WA) and Olympia Snowe (R-ME) this week called for full funding of the government's fleet of polar icebreakers.

In a letter, the senators also urged leaders of the Homeland Security Appropriations Committee to reject a proposal included in the Administration's Fiscal Year 2006 budget that would shift funding for the icebreaker fleet from the Coast Guard to the National Science Foundation.

"We are very concerned that this proposal will create funding uncertainty that could eventually undermine the continuation of these critical assets, jeopardizing the ability of the United States to maintain a presence in the polar regions," the senators wrote. "Maintaining these Coast Guard assets is vitally important for keeping the United States operationally independent and secure in polar waters."

During a subcommittee hearing last month, Cantwell asked Admiral Thomas Collins, the commandant of the U.S. Coast Guard, about the proposal to shift the fleet's funding mechanism.

"There is a communications challenge," Collins said. "I have to be candid with you that I have some level of anxiety about how efficient this process will be over time." ❑

enough ice to raise sea level by 1.3 meters," or about four feet. While the current sea level rise attributable to glacier thinning here is a relatively modest 0.2 millimeters a year, or about 10 percent of the total global increase, the paper noted that near the coast the process had accelerated and might continue to do so.

As a result, the most recent flights of NASA and the Chilean center have been directed over the Thurston Island and Pine Island zones of West Antarctica, near the point where the Bellinghausen and Amundsen Seas come together. The idea is to use the laser and radar readings being gathered to establish a base line for comparison with future measurements, to be taken every two years or so.

"We're not sure yet how to connect what we see on the peninsula with what we observe going on further south, but both are very clearly dramatic and dynamic events," Dr. Bindschadler said. "On the peninsula, large amounts of melt water are directly connected to disintegration of the ice shelf, but the actual mechanism in West Antarctica, whether melt water, a slippery hill or a firmer bedrock, is not yet clear. Hence the need for more data."

The information being gathered here coincides with the recent publication of a report on accelerating climate change in the Arctic, an area that has been far more scrutinized than Antarctica. That study, commissioned by the United States and seven other nations, found permafrost there to be thawing and glaciers and sea ice to be retreating markedly, raising new concerns about global warming and its impact.

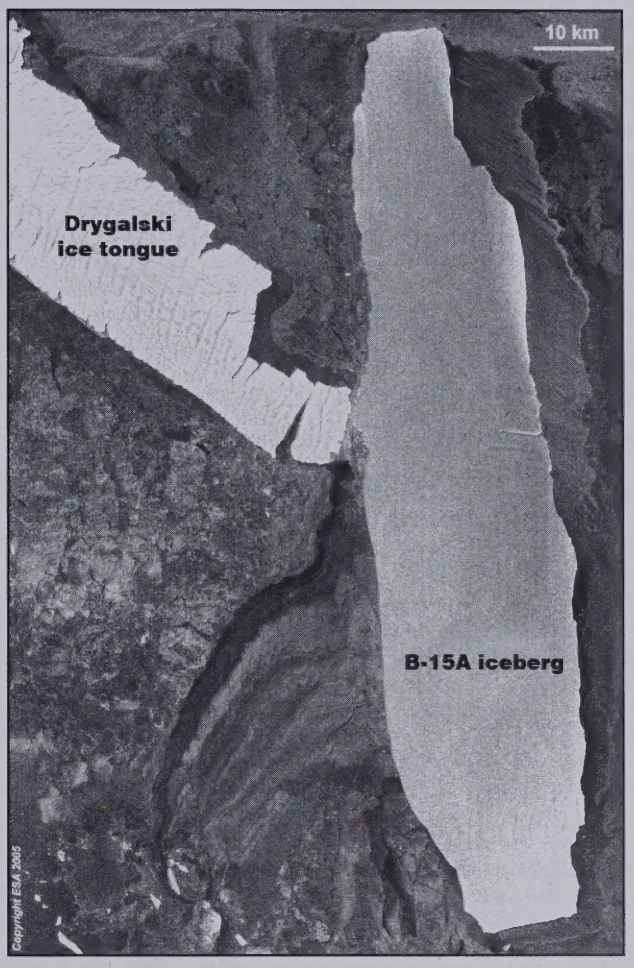
"The Arctic has lots of land at high latitudes, and the presence of land masses helps snow melt off more quickly," said Dr. Steig. "But there's not a lot of land to speak of in the high latitudes of the Southern Hemisphere," making the search for an explanation of what is going on here even more complicated.

The hypotheses scientists offer for the causes of glacier and ice shelf thinning in Antarctica are varied. Rising air, land and ocean temperatures or some combination of them have all been cited.

Some scientists have even proposed that a healing of the seasonal ozone hole over the South Pole and southernmost Chile, a phenomenon expected to take place in the next 50 years or so, could change the circulation of the atmosphere over the frozen continent in ways that could accelerate the thinning of Antarctic ice fields. But even without that prospect, the situation developing in Antarctica is already sobering, glaciologists agree. The data being collected here in West Antarctica and on the peninsula farther north make that obvious, they say, though the degree to which that should be cause for concern around the rest of the planet will become clear only with more research.

"If Antarctica collapses, it will have a major effect on the whole globe," Dr. Rignot cautioned. He warned that "this is not for tomorrow, and Antarctica is such a big place that it's important to look at other areas" around the perimeter of the giant continent, but added, "Nature is playing a little experiment with us, showing us what could happen if the plug were to be removed." ❑

B-15A Hits Drygalski Ice Tongue



***European Space Agency News*, 18 April 2005**—Maps of Antarctica need to be amended. The long-awaited collision between the vast B-15A iceberg and the landfast Drygalski ice tongue has taken place, and the ice tongue has come off worst: a 5km-long section at the seaward end of the Drygalski has broken off.

What happens when an irresistible force meets an immovable object? For the past few months, the European Space Agency's Envisat satellite has been watching an answer play out in ice, as the Luxembourg-sized iceberg converged on the 70-km-long ice tongue.

B-15A's scale is best appreciated from space. The bottle-shaped Antarctic iceberg is around 115 km long, with an area exceeding 2500 sq km. B-15A is the largest remaining section of the even larger B-15 iceberg that calved from the Ross Ice Shelf in March 2000. Equivalent in size to Jamaica, B-15 had an initial area of 11,655 sq km but subsequently broke up into smaller pieces.

Since January, the largest piece, B-15A, has been drifting towards the Drygalski ice tongue in McMurdo Sound.

Envisat was able to record the crash because its radar signals pass freely through the thickest polar storm clouds or local darkness. And because the satellite's instrumentation is sensitive to surface texture as well as physical and chemical properties, it can differentiate types of ice—clearly delineating the older rougher surface of the Drygalski ice tongue and iceberg B15A from the surrounding sea ice. ❑

Giant Iceberg Arrives

***The Herald Sun*, 20 May 2005**—A huge iceberg has drifted into a bay near Australia's Casey station in Antarctica.

The 50km iceberg, called B15G, is part of a huge iceberg—B15—that broke away from the Ross ice shelf more than five years ago.

The iceberg has drifted more than 1000km to arrive in Vincennes Bay, off Casey station.

Station leader Jeremy Smith said B15G was visible as a long ice cliff stretching along the horizon.

The iceberg consists of more than 220 cubic km of ice. ❑

New Theory of Antarctic Ice Cap

by Juliet Ellperin

A sharp drop in the atmospheric concentration of carbon dioxide 34 million years ago helped form the mile-thick ice sheet now covering Antarctica, according to Purdue University scientists.

The new findings, which were published online in the journal *Paleoceanography*, are significant because researchers had previously thought a shift from warm to cold ocean currents prompted the ice sheet to form. Matthew Huber, the paper's lead author and an assistant professor in Purdue College of Science's Earth and Atmospheric Sciences department, attributes the ice formation to the fact that carbon dioxide levels dropped by about 80 percent during the Eocene period between 55 million and 35 million years ago.

Huber said the discovery-based on sediment samples containing fossils of plankton that thrived in cold water for millions of years-was "very disturbing," because it meant the ice sheet could disappear, since carbon dioxide levels are expected to rise rapidly over the next 200 years.

"You just play the movie in reverse. You in due time would end up melting back the Antarctic ice sheet," Huber said. "It should give us pause that today humans are effecting changes in the amount of carbon dioxide in the atmosphere."

Huber and colleagues based their conclusions on core samples taken on both sides of Tasmania, an island that 35 million years ago was positioned like a stepping stone between Australia and Antarctica before the two continents drifted apart, If the warm-water theory about Antarctica were correct, Huber said, there would be evidence of warmthloving microorganisms on both sides of the island. Researchers found such fossils only on Tasmania's west side. ❑

Antarctic Iced Over When Greenhouse Gases—Not Ocean Currents—Shifted, Study Suggests

***Purdue University press release*, WEST LAFAYETTE, Ind., 27 December 2004, by Chad Boutin**—A long-standing theory that provides much of the basis for our understanding of climate change—that the mile-thick ice sheet covering Antarctica developed because of a shift in ocean currents millions of years ago—has been challenged by Purdue University scientists.

Though scientists have theorized that the circulation of warm ocean currents was responsible for keeping Antarctica largely ice-free during the Eocene epoch prior to 35 million years ago, a series of deep-sea core samples taken recently from the ocean floor south of Australia indicates that this theory needs reworking. The sampled sediments, deposited during the period when Australia and Antarctica were beginning to drift apart, show that cold-loving plankton, including diatoms and dinoflagellates, were common in the waters then located to the east of the two then-adjacent continents.

"These fossils indicate that a cold current, not the warm one that has been theorized, was flowing past the Antarctic coast for millions of years before the ice sheet developed," said Matthew Huber, assistant professor of earth and atmospheric sciences. "Because the ice sheet then appeared very rapidly, over a period of just a few tens of thousands of years, some other factor must have caused the rapid cooling that allowed it to form."

As additional Eocene records show that substantial changes in the planetary carbon cycle were taking place at around the same time the ice sheet developed, Huber said that the most justifiable explanation for the change lays in atmospheric mechanisms.

"In light of all these data, a change in carbon dioxide levels in the atmosphere is a more reasonable explanation for the rapid icing of the Antarctic continent," he said. "It should give us pause that today humans are effecting changes in the amount of carbon dioxide in the planet's atmosphere."

The research, which Huber performed with scientists from institutions in Sweden, Canada, the Netherlands, the United Kingdom and the United States, appears in the December 2004 issue of *Paleoceanography*. A companion paper, which offers a geological perspective on the separation of the two continents and on which Huber also participated, appears in the same issue.

> *Huber acknowledges that his team's work will provoke controversy but also cautions that the conclusions are suggestive, not definitive.*

For much of the past 150 million years, Antarctica has been largely ice-free, and climate scientists have theorized that a precursor to the East Australia Current—which today carries warm water southward along that continent's coast—was responsible for keeping Antarctica warm. This longstanding theory suggests that as the two continents drifted apart, the widening gulf between them disrupted the warm current's flow about 32 million years ago, preventing its heat from reaching Antarctica and plunging the continent into the deep freeze it still experiences today.

"Back when Australia and Antarctica were nearly touching, it was reasonable to imagine that such a current could keep the South Pole warm. After all, despite its high latitude, Europe is far warmer than Canada largely because the Gulf Stream warms it," Huber said. "From that conjecture have sprung many other theories describing how ocean currents warm the planet. But it's important to remember that it's just a conjecture, and now we have fossil evidence that appears to refute it."

In 2000 a survey vessel brought back core samples taken from waters on both sides of Tasmania, which 35 million years ago was positioned rather like a stepping stone between the two continents. At that time, the three landmasses formed a shallow, warm-water bay to the west of the island, while to the east was open ocean.

"If the warm-water current theory were to hold true, the same kinds of warmth-loving microorganisms would have been found in Eocene sediments from both sides of the island," Huber said. "We did find fossils of warmth-loving microorganisms west of Tasmania, where the bay was. But to the east, we found only fossils of cold-loving dinoflagellates. That indicated that there was no warm current flowing along that coast."

Another piece of cont rary evidence was the timing of the Antarctic ice cap's formation. The continent did not begin to ice over until 2 million years after a deep-water channel opened between it and Australia, but when the ice cap did begin to form, it formed comparatively rapidly.

"So you have separation between the continents for 2 million years, during which time the Antarctic climate remains largely the same. Then, suddenly, within a few tens of thousands of years, the continent is under a mile of ice," Huber said. "Something other than a shift in ocean currents and continental position caused that change."

The team found that fluctuations in the carbon dioxide cycle was the most likely explanation for the enigmatic warmth of the Eocene period and of the subsequent cooling.

"Our results are most consistent with very high levels of carbon dioxide in the Eocene and a massive drop near the end of that period," Huber said.

"This decreased quantity of carbon dioxide and the atmospheric feedback mechanisms it triggered are the likeliest explanation for the sudden climate shift at the close of the Eocene," Huber said. "Though we do not have definitive proof of this theory yet, it simply makes more sense in light of the core samples and timing of the ice cap's formation." ❑

Antarctica's Central Ice Cap Grows While Glaciers Melt

***The Los Angeles Times*, 20 May 2005, by Robert Lee Hotz**—As glaciers from Greenland to Kilimanjaro recede at record rates, the central ice cap of Antarctica has steadily grown for the past 11 years, partially offsetting rising seas due to the melt waters of global warming, researchers said Thursday.

The vast East Antarctic Ice Sheet—a 2-mile-thick wasteland of ice larger than Australia, drier than the Sahara and as cold as a Martian spring—increased in mass every year between 1992 and 2003 due to additional annual snowfall, an analysis of satellite radar measurements showed.

"It is an effect that has been predicted as a likely result of climate change," said David Vaughan, an independent expert on the ice sheets at the British Antarctic Survey in Cambridge, England.

In a region known for the lowest temperatures recorded on Earth, it normally is too cold to snow across the 2.7 million squares miles of the ice sheet. Any additional annual snowfall in East Antarctica, therefore, is almost certainly due to warmer temperatures, four experts on Antarctica said.

"As the atmosphere warms, it should hold more moisture," said climatologist Joseph R. McConnell at the Desert Research Institute in Reno, who helped conduct the study. "In East Antarctica, that means there should be more snowfall."

The additional snowfall is enough to account for an extra 45 billion tons of water added to the ice sheet every year, just about equal to the annual amount of water flowing into the ocean from the melting Greenland ice cap, the scientists reported in research published online Thursday by the journal *Science*.

Rising sea level, which could swamp many coastal and island communities, is considered one of the most serious potential consequences of global warming, according to the most recent assessment by the U.N. Intergovernmental Panel on Climate Change.

> *The vast East Antarctic Ice Sheet [is] larger than Australia, drier than the Sahara and as cold as a Martian spring.*

Overall, sea level is believed to be rising worldwide at an estimated rate of 1.8 millimeters (0.07 inches) a year due to the expansion of warming water and the added outwash from melting glaciers in Greenland, Alaska, tropical highlands and elsewhere in Antarctica itself.

Every millimeter of increased sea level corresponds to about 350 billion tons of water a year.

The growth in the East Antarctic ice cap is enough to slow sea-level rise by about by a fraction of that—0.12 millimeters a year—the researchers reported.

All told, the fresh water locked up in the ice of East Antarctica is enough to raise the level of the oceans by about 196 feet, experts said. If it continues to grow as expected, the ice sheet could help buffer some but not all of the effects of anticipated sea-level rise for much of the coming century, the researchers said.

"It is the only large body of ice absorbing sea level rise, not contributing to it," said radar mapping expert Curt H. Davis at the University of Missouri, Columbia, who led the research team.

The researchers based their conclusions on an analysis of 347 million radar altimeter measurements made by the European Space Agency's ERS-1 and ERS- 2 satellites between June 1992 and May 2003.

They determined that the ice cap appeared to be thickening at the rate of 1.8 centimeters every year. The ice is thinning in West Antarctica and other regions of the continent.

"The changes in the ice look like those expected for a warming world," said glaciologist Richard Alley at Pennsylvania State University.

"The new result in no way disproves global warming; if anything, the new result supports global warming." ❑

900,000-Year-Old Ice May Destroy U.S. Case on Kyoto

***The Guardian*, 23 April 2005, by Barbara McMahon and Paul Brown**—An Italian expedition to Antarctica has taken a sample of ice which is more than 900,000 years old and could give scientists evidence of past climate changes which would discredit global warming doubters.

The ice core, which is double the age of previous samples, will show how much carbon dioxide there was in the atmosphere during previous warm and cold phases in the climate and whether the current concentrations caused by burning fossil fuels are likely the lead to catastrophic global warming later this century.

> *Two chunks of ice were extracted ... on Antarctica's Dome C, the thickest ice sheet in the world, and in the Ross Sea.*

The new core could be enough to discredit the fast diminishing band of climate skeptics, who have the ear of the Bush administration and who say that the climate has always fluctuated and man's destruction of forests and use of oil has nothing to do with the current rising temperatures and increased storminess across the world.

Current scientific belief is that in all that time concentrations of greenhouse gases have not been as high as they are now, but the proof should be in these new ice cores.

President Bush used "uncertainties" in climate science, particularly the volume of carbon dioxide in the atmosphere during warm periods, to justify repudiating the Kyoto protocol when he was elected to office for the first time.

He said that cutting fossil fuel use would damage the US economy and that more scientific research was needed. Since then the science has become more certain, but this latest ice core could provide evidence that even hardliners would find hard to ignore.

World temperatures have risen in the past in direct relationship to the amount of greenhouse gases, mostly carbon dioxide and methane, in the air, but the new samples will enable scientists to analyse 10 to 12 glacial and interglacial cycles, compared with the four attained with the previous record holder, a 420,000-year-old ice core drilled at Russia's Vostok station five years ago.

Two chunks of ice were extracted, near the Italian-French station Concordia on Antarctica's Dome C, the thickest ice sheet in the world, and in the Ross Sea. The first is some 900,000 years old.

> *This latest ice core could provide evidence that even hardliners would find hard to ignore.*

Scientists now hope to reach the maximum attainable limit, taking samples that have been in existence for 1.5m years. These results of the European Project for Ice Coring in Antarctica (EPICA) were made possible by drills able to penetrate some 3,000 metres below the surface of the polar ice cap.

Drilling started in 1996, and operations came to a close in 2004, with a final drill depth of 3,270.2 metres (10,730ft). The last stretch of coring was the hardest, with ice close to melting point.

Ten European nations took part: Belgium, Denmark, France, Germany, Italy, Norway, Holland, UK, Sweden and Switzerland with national and European financing.

The nine specialists from France and Italy will end their mission next November. ❑

Due South

By Jeff Rubin, Antarctic Editor

Science fiction, wrote Isaac Asimov, one of the genre's undisputed masters, "does not escape into the 'isn't' as most fiction does ... but into the 'just possibly might be.'" In other words, good science fiction discusses not just fantasy, but also things that might well come to pass. Many things we take for granted today were first imagined by science fiction writers. To cite just one example, Arthur C. Clarke came up with the notion that geostationary satellites could transmit telecommunications.

In that same matter-of-fact way, science fiction writer Kim Stanley Robinson, who visited Antarctica in 1995 on a National Science Foundation Artists & Writers grant, described a curious phenomenon in his fascinating novel, *Antarctica* (1998).

Robinson has two characters in the novel discussing their work as tour guides for a special kind of client:

> *"I also freelanced for Classic Expeditions of the Past Revisited, which its guides called Stupid Expeditions of the Past Revisited, because the trip designers always chose the very worst trips in history, sometimes with the original gear and food."*
>
> *"You're kidding."*
>
> *"No. But you'll notice they're out of business now."*
>
> *"Masochist travel—a new genre, still underappreciated."*
>
> *"It'll catch on. All travel is masochist. People will do anything..."*

Now comes word that two teams of British and Norwegian adventurers are to recreate the "race" to the South Pole by Norwegian Roald Amundsen and Briton Robert F. Scott, won by Amundsen, who arrived at 90° South on December 14, 1911; Scott got there 35 days later.

Just as Robinson predicted would happen, the British and Norwegians will attempt to do it using the same equipment and rations as Scott and Amundsen used.

Unlike the many adventurers who've crossed Antarctica recently, the re-enactors will not use kites to harness Antarctic winds to pull themselves along. Nor will they use the GPS navigation systems, modern skiis, carbon-fiber sledges, high-tech stoves, and scientifically-calculated food rations favored by intelligent adventurers today.

'People Will Do Anything...'

Instead they'll use sealskin suits, reindeer-fur jackets and sleeping bags, wool sweaters and wooden skiis.

"They've gone to great lengths to get period equipment," Dr. David Wilson, a great nephew of Scott's team member Edward Wilson, told the *Gloucestershire Echo* newspaper in April. "I believe kit has been cut from the same piece of cloth that was used in 1910."

They'll also eat as the early explorers did—which is bad luck for the British re-creation team, since we now know that Scott and his men were starving as they slogged back from the Pole.

> *Since the re-enactors will use dogs, Greenland will have to stand in for Antarctica.*

"In Scott's day they had very little idea about nutrition, so we'll atrophy with malnourishment setting in from a very early stage," one of the British re-enactors cheerfully told London's *Daily Telegraph* newspaper in February.

"His rations—which we'll also be taking—consisted of things like butter, some sugar, biscuits, cocoa and tea in a wooden chest, and pemmicam, a high-fat mixture of dried meat, lard, oatmeal and honey."

Silly? Indeed! But it gets even better.

Because the Antarctic Treaty system has prohibited non-indigenous species in Antarctica since 1994, no sled dogs can be used on the continent, and dogs, of course, figured prominently both in Amundsen's victory and Scott's loss.

Since the re-enactors will use dogs, Greenland will have to stand in for Antarctica.

That's right: the re-enactors will race across Greenland, not Antarctica, to a pretend "South Pole."

Why would anyone undertake such a bizarre and pointless stunt?

"Follow the money," Deep Throat famously advised Bob Woodward in his effort to unravel the Watergate scandal, and that rule applies here, too.

TV is also involved, no surprise given the so-called "reality shows" now popular among idiot-box viewers.

This polar matchup is to be filmed for a six-part BBC series called "The Great Race," which will also have talking-head historians rehashing the old controversies about why things ended up as they did. (American viewers may see the charade on the History Channel.)

"It's not a re-enactment of Amundsen and Scott's expedition," a BBC spokeswoman told the *Echo*. "But the circumstances of the 1911 expedition will be recreated to see if modern man can achieve what they did."

Another possible motivation: the Scott supporters apparently want not to rewrite history, but to "remake" it altogether.

The British team, led by Bruce Parry, a former Royal Marine turned television presenter, is "hoping to avenge Scott's defeat," London's *Daily Telegraph* newspaper reported in February. According to Parry, the criticism of Scott is unfair: "He was an incredible man."

The Scott re-enactors will not use ponies as Scott did. He found them unsuitable for travel in the snow; they fell through crevasses, floundered in deep snow, or had to be shot. In the first stages of the trip, they'll use sledge dogs as Scott did, but then they'll do as Scott's men also did: give up on the dogs and haul the sledges themselves. The dogs, humanely, will be flown out as the adventure proceeds.

The Norwegian team is to be led by adventurer Rune Gjeldnes. "This will be a great challenge, not least because we have to use 90-year-old equipment," he told the Norwegian newspaper *Aftenposten*. "But we will have fun, and we will win."

"For me, this is a once-in-a-lifetime experience," Gjeldnes told the *Guardian* in April. "It is a big honour to lead the Amundsen group and to try to understand what these men went through."

Amundsen, he added, "spent three years training for this. We only had two months. We will also have to cope with the antiquated equipment."

While Amundsen's team killed and ate their sled dogs or fed them to their fellows as they neared the Pole, modern sensitivities preclude such butchery, so the huskies will be flown out by helicopter at appropriate points on the 1500-mile journey.

On April 12, a team of five Norwegians and eight Britons flew to Tasilaq, on the southeastern coast of Greenland, to begin their quixotic quest.

David Wilson seems to be one of the few people who question the validity of this made-for-TV stunt. "How can they hope to re-create their journey if it's in Greenland?" he asked the *Echo*.

> *And of course, the adventurers will also be able to call for rescue if they get into trouble on the ice, something Amundsen and Scott could not..*

And of course, the adventurers will also be able to call for rescue if they get into trouble on the ice, something Amundsen and Scott obviously could not have done.

In the end, even trips across parts of the real Antarctica that are made by modern-day adventurers (they are not explorers) are meaningful only to the participants themselves. In the case of "The Great Race" across Greenland to a faux pole, the game also has meaning only to the adventurers themselves—and perhaps a few people watching the exercise through the warped lens of television. ❑

South Pole Station All Closed In

By Jeff Rubin

With five out of eight sections already occupied and a station inauguration set for the last week of January 2007, work on the new elevated South Pole station reached a major milestone this past summer, as construction crews completed the exterior steel framing and panel enclosure.

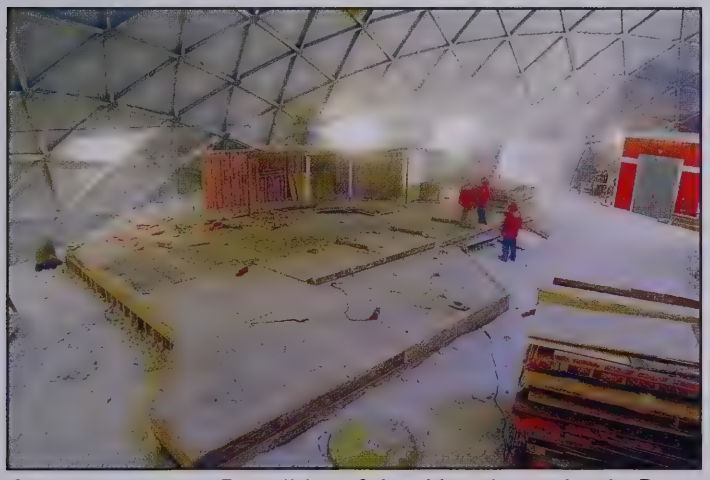
The South Pole meteorology department has moved into its new headquarters in the elevated station, and in November and December, science operations will relocate from the Skylab building and the science building under the Dome.

Work is now focusing on the interior.

One of the station's most unusual features is the color scheme in the main hallways, where half-meter square Pirelli rubber tiles in yellow, red, orange, cherry, green and blue—one or two colors per section—are mounted to the walls in a checkerboard grid, with black and gray backgrounds.

"In developing the color palette for the interior habitat," says Joe Ferraro, principal at Ferraro Choi and Associates, Ltd. of Honolulu, the station's architects, "common areas were given a neutral background similar to the exterior polar environment , with vibrant colors and pattern applied to distinct areas representing the seven chakras. The word chakra is Sanskrit for wheel or disk and signifies one of seven basic energy centers in the body. Each of these centers correlates to major nerve ganglia branching forth from the spinal column."

"These vibrant colors," Ferraro says, "add energy to the habitat which helps to invigorate the occupants in this remote and isolated environment."



Going, going, gone: Demolition of the old station under the Dome continues; the old galley, greenhouse, and firefighting shack are now gone.

Doug Forsythe, senior construction coordinator, inspects brightly-colored rubber tiles mounted in a checkerboard grid in the corridors of the new station. "These vibrant colors, " says architect Joe Ferraro, "add energy to the habitat which helps to invigorate the occupants."

Demolition of the old station under the Dome also proceeded this summer, says

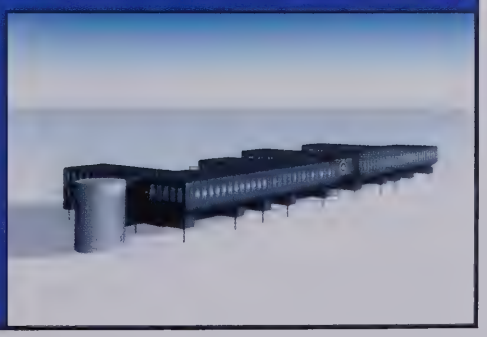
construction project manager Jerry Marty. The old galley, greenhouse, and firefighting shack are now gone, cut into pieces that fit on pallets to be flown to McMurdo and then put into containers for shipping back to the States. Once in the U.S., the materials will either be salvaged, dumped in a landfill or burned for energy.

Although the buildings were demolished, specific representative components of the interiors that were easily salvaged—such as the kitchen appliances, the serving line and some chairs and tables from the galley—were set aside for possible inclusion in a planned Seabee musuem.

"The goal is to take the Dome, or a portion of the Dome, back for reassembly," says Marty. But because the buildings under the Dome were judged to be unsuitable (as well as too costly) for disassembly and reassembly, movies have been made of the interior of all the buildings under the Dome—of the floors, walls, ceilings—detailing everything down to the pictures on the walls. These records will be used to reconstruct the Dome buildings, or parts of them "like a Hollywood set," for any eventual museum.

"If we can take the Dome apart for the same price as demolition," Marty says, "it's feasible that this can be rebuilt." All of the Dome's main connection plates are still color-coded, he adds, and the original assembly manual remains on hand. ❑

As the exterior construction on the new South Pole Station draws near completion, we decided to re-run, from previous issues, two in-progress photos (taken by construction project manager Jerry Marty), as well as an artist's rendition of the finished station. We expect to have more interior photos by our next publication date. - Editor



Antarctic Notes

Wanted: Psychrophilic Tradeswomen

***www.telegraph.co.uk*, 17 April 2005, by Jessica Lamb**—Are you a plumber, electrician or carpenter? Are you also a woman who enjoys long, dark nights at sub-zero temperatures? If the answers are Yes and Yes, the British Antarctic Survey needs you. BAS wants to recruit more women to redress the "gender imbalance" among its Antarctic staff. Out of more than 200 employees there, only 35 are female. The organisation is placing an advertisement, at a cost of £4,000, in *Cosmopolitan* magazine next month, to attract young, adventurous candidates.

Russia to Drill Lake Vostok

RIA Novosti, ST.PETERSBURG, 13 May 2005—Russia is going to continue deep drilling to subglacial Lake Vostok, Russian Antarctic chief Valeri Lukin told journalists on Friday. No drilling has yet been done this season, he said. "We got the permit only in the middle of last January, when the season was drawing to the end. This year we've overhauled the drilling equipment and inspected the well. Now, it is fully ready for drilling operations to go on. We'll resume them during the 2005-2006 season," Lukin said. The lake will be reached in 2007-2008. "We hope it will happen in 2007," he said. Drilling was suspended in the late 1990s, and only 130 meters remains to go. The point is that there is a danger of polluting the lake. In recent years Russian specialists have created equipment capable of penetrating the lake without infecting it with hazardous matter.

Antarctic Fish Adapt to Warmer Water

***New Zealand Press Association*, 4 May 2005**—A research project at Scott Base in Antarctica on bald rock cod living in icy waters has suggested an unexpected capability to adapt to global warming. The Antarctic fish was able to adjust its cardiovascular system and metabolism to adapt to rising water temperatures. "This shows that Antarctic fish are much more flexible than was previously thought," said Associate Professor Bill Davison, of Canterbury University, who led the project. The fish, which are found under the sea ice, normally live in constant water temperatures of -1.8ºC. But in aquariums at Scott Base and Canterbury University the fish became accustomed to water of as high as 8ºC. The study is published in the journal *Biology Letters*.

FSU Team Drills Antarctic Sediment

***Tallahassee Democrat*, 3 May 2005, by Gerald Ensley**—A Florida State-led team of scientists undertook the first test of a new method of taking the samples from the ocean floor around Antarctica: a full-scale drilling rig mounted on an icebreaker. Historically, Antarctic sediment samples were taken from a fixed location on an ice shelf or with a small drilling apparatus from a regular ship—both of which limit the range from which samples can be taken. Late last year, NSF approved the $3 million project and the drill was installed on the *Nathaniel B. Palmer*. On its first test, April 7, the project retrieved 10,000-year-old sediment from the ocean bottom. Bad weather and rocks prevented the scientists from reaching their goal of taking 15-million-year-old samples from the continental shelf. Geologists first took sediment samples from Antarctica in the late 1950s. FSU houses the world's largest collection: more than 6,000 samples.

Glaciers in Mass Retreat

***nature.com*, 21 April 2005, by Michael Hopkin**—Analysis of more than 50 years of aerial photographs and satellite images shows that almost all the glaciers that flow into the sea on a westerly stretch of the Antarctic Peninsula are retreating. "Fifty years ago most glaciers were slowly growing in length, but the pattern is now reversed and they're shrinking," said British Antarctic Survey's Alison Cook. Of 244 glaciers studied, 87% have shown a net retreat since the 1940s. The trend may be linked to local climate changes on the Peninsula, where temperatures have risen by around 2ºC over the past 50 years, or to changing ocean currents. Some of the retreats are dramatic: Widdowson Glacier, for example, has been receding by 1.1 km each year for the past five years.

Korea to Build Second Base

***Korea Times*, 9 March 2005, by Na Jeong-ju**—South Korea will set up its second research station in the center of Antarctica by the end of 2009, the Ministry of Maritime Affairs and Fisheries said. South Korea's King Sejong Base was built on King George Island in the South Shetlands in 1983. The Ministry also said it has ordered a 6,000-ton icebreaking vessel, to be built by 2008.

Flower-less Women's Day

***RIA Novosti*, ST. PETERSBURG, 1 March 2005**—Russian women working in the Antarctic will not be presented with flowers on March 8, International Women's' Day, since non-indigenous species are prohibited from the continent, Russian Antarctic expedition head Valery Lukin said. "Mostly men work in the Antarctic. About 20 women are members of the crew and the research group of the scientific expedition ships *Akademik Fedorov* and *Akademik Alexander Karpinsky*. Only one representative of the fair sex works on the stations. "Marina Dorozhkina conducts research on the Bellinsgausen station on a par with men," Mr. Lukin said.

Warming Cleared on Ice Shelf Rap

***www.theregister.co.uk*, 24 February 2005, by Pelle Neroth Taylor**—The high-profile collapse of some Antarctic ice shelves is likely the result of natural current fluctuations, not global warmings. This surprising finding is supported by analysis of data from a European Space Agency satellite, says Duncan Wingham, Professor of Climate Physics at University College London. The data, measuring changes in ice thickness across the Antarctic ice sheet using the polar-orbiting satellite, show areas of growth from snowfall are as common as areas of decline. This contrasts with the northern Antarctic Peninsula, where there has been a drastic increase in temperature, thinning of ice sheets and collapse of ice shelves. "Satellites are giving us a picture of the continent as a whole," Wingham said. This broader picture shows evidence of growth and decay from place to place, a picture more in line with natural variations in snowfall and ocean circulation.

Queen Opens Troll Station

***Norway Post*, 12 February 2005**—Queen Sonja landed on the new Norwegian airfield in Antarctica, following a nine-hour flight from Cape Town. She also opened the new permanent Norwegian research station in Queen Maud Land, Troll station, capable of housing seven people throughout the winter.. A new, large airfield has been built on the glacier, and an extensive research programme has also been established. During her two-day visit Queen Sonja will also visit South Africa's SANAE research station and take a long hike in the spectacular mountains near the base.

Floods Damage Scott's Hut

***www.stuff.co.nz*, 4 February 2005, by Joanna Norris**—Scott's Terra Nova hut has been badly hit by floods. Antarctic Heritage Trust chairman Nigel Watson said flood water had seeped inside the hut and had frozen: "It was a major shock to us. There was significant evidence of flooding." The damage was found by trust workers on an expedition to upgrade Terra Nova and Shackleton's Nimrod Hut. The four-man restoration team took more than a week to remove the ice. It was not known if warmer temperatures or heavier snow caused the flood, Mr Watson said.

Ice Sheet is 'Awakened Giant'

***NewScientist.com*, 2 February 2005, by Jenny Hogan**—The West Antarctic Ice Sheet (WAIS), previously assumed to be stable, is starting to collapse, scientists warned. Data presented at a conference in Exeter by Chris Rapley, from the British Antarctic Survey, show that glaciers within WAIS are starting to disappear. Scientists used to view Antarctica as a "slumbering giant", he said, but now he sees it as an "awakened giant." Indications that climate change may be affecting WAIS comes from three glaciers, including Pine Island and Thwaites. Data reveal they are losing more ice—mainly through the calving of icebergs—than is being replaced by snowfall. According to a preliminary analysis, the difference between the mass lost and mass replaced is about 60%.

Ship Makes Record Southing

***www.stuff.co.nz*, 1 February 2005, by Jarrod Booker**—The 48-passenger tour ship *Spirit of Enderby*, operated by Christchurch-based Heritage Expeditions, has made history by venturing further south than any other vessel. It broke the record by three nautical miles when it reached 78°40'S in the Bay of Whales on Friday, thanks to an absence of ice.

Sea Squirt Yields Cancer-Fighter

***New Scientist*, 29 January 2005**—A team led by Bill Baker of the University of South Florida in Tampa dives in Antarctic waters to collect organisms that might yield potential drug molecules. They screen these organisms for active chemicals by placing samples of their tissues on the arms of local Antarctic sea stars. If the sea stars try to get the material away from their mouths this indicates the molecule may be toxic. The researchers then test the molecules' effects on cancer cell cultures in the lab. The team has isolated a chemical from the Antarctic sea squirt *Synoicum adareanum* that is unusually effective at killing various strains of melanoma cells. Preliminary experiments at the National Cancer Institute have shown that one such toxin, named palmerolide A in honor of Palmer station, maintains its melanoma-killing properties in living tissue. Full animal tests are expected to begin later this year.

Record Balloon Thrice Circles Pole

***NASA press release*, 28 January 2005**—Flying near the edge of space, a NASA scientific balloon made of thin polyethylene material—about the same thickness as ordinary sandwich wrap—broke the flight record for duration and distance, soaring for nearly 42 days and making three orbits around the South Pole at an altitude of about 125,000 feet. The helium-filled balloon, almost as large as one and one half football fields, carried the two-ton Cosmic Ray Energetics And Mass (CREAM) experiment. CREAM is designed to explore the supernova acceleration limit of cosmic rays, the relativistic gas of protons, electrons and heavy nuclei arriving at Earth from outside the solar system. In addition to gathering data, the flight demonstrated the capabilities of NASA's Ultra-Long Duration Balloon (ULDB) support system, which is being developed to extend flights up to 100 days.

PHOTO BY GERRY SCHMITZ

"This panoramic of King penguins was taken in the Salisbury Plains rookery on South Georgia Island on December 7, 2000," says photographer Gerry Schmitz. "It won the international grand prize in the Worldwildlife Fund Canada photo contest and is featured on the cover of their 2005 Members Calendar. It is also one that I would especially like to dedicate to one of my travelling companions on that memorable voyage, Mr. Luis Garcia of Mission, Texas, who passed away in June 2004. His gentle humour will be missed, and he would have enjoyed this photo."

Antarctic Duck Ruffles Feathers

***news.bbc.co.uk*, 20 January 2005**—Ducks may have been paddling about in primeval swamps when *T. rex* was king of the dinosaurs, scientists announced in the journal *Nature*. Fossil remains of a bird that lived 70 million years ago appear to belong to a relative of modern ducks and geese. The partial skeleton, discovered on Vega Island in the Weddell Sea, is likely to stir up controversy—many scientists believe modern bird lineages did not evolve until the end of the dinosaurs' reign. The new find is known as *Vegavis iaai*.

Hillary Saw Shack's Ghost

***www.stuff.co.nz*, 19 January 2005, by Heather Tyler**—Conservation work beginning this week on Sir Ernest Shackleton's hut in the Antarctic has special significance for Sir Edmund Hillary who says he saw the ghost of the eminent British explorer when he first visited the hut at Cape Royds. In a video promoting the conservation project, Hillary said it was a unique experience that had a profound effect on him. "I remember when I first went to Shackleton's hut—and I'm not a person who really sees things very much—but I went inside the door and when I opened the door—it's a rather sort of bare hut inside—but I distinctly saw Shackleton walking towards me and welcoming me and then it all sort of flashed away and he was gone," he said. "It's the only time I can ever remember something occurring like that."

Albatross Mystery Solved

***www.telegraph.co.uk*, 14 January 2005, by Roger Highfield**—The mystery of where albatrosses go during their epic migrations has been solved by a study that will help the world's most threatened family of birds. Tracking the precise movements of 22 birds reveals that males are most likely to circumnavigate the world, with the fastest managing a distance of 14,000 miles in 46 days—the equivalent of a steady 13mph. The study has key conservation benefits because it offers the first hope of identifying the major wintering and staging areas used by this species, which is the first step in reducing its slaughter by legal and illegal long-line fishing methods. The study, reported in the journal *Science* today by Prof John Croxall and colleagues from the British Antarctic Survey, outlines, for the first time, the year-round habitat of the grey-headed albatross. Prof Croxall said: "By understanding where these birds go when they're not breeding, we can brief governments and fisheries commissions to impose much stricter measures capable of reducing the number of birds killed."

Grass Flourishes in Warmer Antarctic

***The Sunday Times*, 26 December 2004, by Jonathan Leake**—Scientists have reported that broad areas of Antarctic hair grass are now forming turf where there were once ice-sheets and glaciers. Tufts have previously grown on patches of Antarctica in summer, but the scientists have now observed bigger areas surviving winter and spreading in the summer months. Pete Convey, an ecologist with the British Antarctic Survey, said: "Grass has taken a grip. There are very rapid changes going on in the Antarctic's climate, allowing grass to colonise areas that would once have been far too cold. What we are seeing now is dense swards or lawns forming and both plants growing much further south than ever before. It is quite remarkable."

New Radar Studies Mesosphere

***www.physorg.com*, 24 May 2005**—A new radar just installed at the U.K.'s Rothera station is giving scientists the chance to study the highest layer of the earth's atmosphere at the very edge of space. Using the new radar, scientists will be able to investigate climate change and explore the theory that while the lower atmosphere is warming, the upper atmosphere is cooling by as much as 1°C. each year. They will also be able to find out more about the complex waves, tides and other mechanisms that link this region—known as the mesosphere—to the lower regions of the atmosphere. At heights of around 50-62 miles, the mesosphere is difficult to investigate and is the least-explored part of the Earth's atmosphere. The low air pressure at this attitude means that it is impossible to fly aircraft in the mesosphere. Huge weather balloons used to measure stratospheric ozone cannot climb high enough to reach it, and satellites begin to burn up when they enter it. "Fortunately, nature provides us with an excellent answer to the problem of investigating the mesosphere," said Professor Nick Mitchell who heads the project at the University of Bath. "We can use radar to bounce radio waves off meteors to find how fast they are moving and so measure the winds at the edge of space. The fading of the radio echoes from the meteors also lets us measure the temperature of the atmosphere. We can detect thousands of meteors in any one day." ❑

Canvas and Ice: On a Tall Ship to Antarctica

PHOTOGRAPH BY BRETT YATES. PHOTO COURTESY OF BARK *EUROPA*

Making all sail:* Europa *on the Pacific in 2002.

***The Globe and Mail*, USHUAIA, ARGENTINA, 29 Jan. 2005, by Todd Jarrell**—Like a patient, haltered thoroughbred, the tall ship *Europa* nodded quietly at her moorings on the cold swell of Argentina's Beagle Channel. In January, at the height of southern summer, *Europa* was in port a brief time, provisioning for a daring voyage to Antarctica.

Bathed in stark morning light, her intricate rigging, as deftly woven as a web, stood out in bright relief against the brooding peaks above the town of Ushuaia, the small but vibrant port town at the remote southern tip of South America. This land has long fascinated adventurers; in 1520, the native Yagan campfires caused Ferdinand Magellan to chart it as Tierra del Fuego, the Land of Fire. Even the locals call their home El Fin del Mundo—The End of the World.

Of the 24,000 visitors expected to sail to Antarctica this season (a number that has doubled since 1994), almost all will transit via Ushuaia—the End of the World is now just the stepping stone to the Last Place on Earth.

But of the 40 or so icebreakers, cruise liners and yachts calling into Antarctica, *Europa* is the only tall ship, and for closeness to the sea, to history and to wildlife—to the heart of the adventure itself—there is no better way than on a quiet deck under stacks of wind-filled canvas.

Built in 1911, *Europa* is 30 metres tall and 56 metres long, carrying up to 30 sails on three masts. Made of hand-riveted steel, she was built to withstand the rigours of ice. Refitted in 1994, she can accommodate up to 50 "special personnel" in shared cabins, sleeping in bunk beds like real sailors. The idea is that, while the professional crew handles the cooking and cleaning for guests, they also teach them to stand watch, steer the ship, haul the lines and climb aloft. For enthusiasts, this is hands-on training that is hard to come by. For the not-so-enthusiastic the ship has a lenient policy: "Anything you may; nothing you must."

Slipping her lines and filling her sails, down the Beagle Channel *Europa* ran as if on liquid rails, her sails taut, the wind flexing her masts like a beast leaning into its traces. High above, ragged mists dragged between the island's saw-toothed peaks, dappled with summer snowcaps. Evening brought the ocean's unmistakable swell, and soon land was but a silhouette hanging like a stage prop above our wake. Twinkling lights echoed the original inhabitants' warming fires.

To the west lay Tierra del Fuego's most renowned feature, Cape Horn, the tailbone of the Americas. Almost 1,000 kilometres to the south lay the Antarctic Peninsula. In between churned the notorious Drake Passage, treated by seafarers with abiding respect. For centuries, this was the sole route around the Americas and the Horn's fierce storms were so costly to shipping that 30,000 lives were lost and vast fortunes spent to build the Panama Canal shortcut.

I hoped that my 40-year fascination with these waters—honed by twice as many seafaring books—would be satisfied on this voyage. We sailed in the same manner as those historical explorers and sailors who had fought their ships through the Drake Passage, for once aloft in the rigging, the square rig deckhand's basic duties have changed precious little in 200 years. The Drake wasted no time in asserting its bold reputation as waves rolled the deck and seasickness found a few victims. It is said there are two stages to seasickness. One: You think you'll die. And two: You hope you'll die.

Five Days in the Drake

But like a practitioner of martial arts, *Europa* uses the force of her opponent to her own advantage; the wind in the sails helped to stabilize the sea's motion. We became used to walking like drunks on rubber legs and clutching our plates at mealtime. The galley pots sloshed and clanked, but even in the worst seas, the cook, Marianne, turned out delicate soups, wholesome "meat and potato" meals and fresh breads baked nightly.

Five boisterous days in the Drake brought us to our first anchorage—the South Shetland Islands, shouldering up from the sea like granite galleons. With three dinghies dedicated to shore runs, we soon landed ashore, in awe of a black-and-white world. Our first impression was of desolation, but the dark beaches gave way to soaring cliffs and hillsides splashed with rust-yellow lichens and soft mats of rich, green mosses.

Thousands of penguins stake claims on the cold stones. You smell them before seeing them—the strong ammonia scent of penguin droppings is an impressive calling card. They looked to be shipwrecked partygoers busily sorting out guests from the waiters; overused or not, the tuxedoed penguin cliché is tough to avoid in the face of such refined haberdashery. Interested in humans (it's our freakish long legs, I presume), the implausibly proper-looking birds waddled among us, satisfying curiosities, which sometimes required a poke in the pants and the pecking of shoes.

The following afternoon *Europa* sailed into the flooded volcanic caldera of Deception Island, surrounded by high mountains. Abandoned in the face of an eruption, the island's whaling station stood bleached and vacant, littered with volcanic ash and lumps of lava. Rusted, freeze-ruptured food tins still lined kitchen shelves.

Geothermally heated waters streamed from the lava beach at Pendulum Point. The intrepid, I was told, swim here. While stripping off for a dip in frozen Antarctica seemed to me an act of

PHOTOGRAPH BY TODD JARRELL

A good lookout for ice was imperative for Europa's safety.

lunacy, my clothes soon lay in a forlorn pile on the steaming black sand. The trick, I was told, was to dig a tub-sized hollow in the dark sand where the near-boiling water meets the near-freezing sea. Between the moans of content and the shrieks, it was no trick to tell who had it right.

The hard part, as expected, was getting out and dressed as icy winds swept great banks of steam up the superheated shoreline, beneath oxidized, blackened and ice-spackled crags above.

A Boom with a View

Daytime anchoring for shore trips and island-hopping by night along the peninsular west coast meant keeping constant watch for icebergs and submerged ice "growlers." The channel near Trinity Island is famous for collecting icebergs—a menagerie of frozen flotsam. Similar to cloud gazing, we saw in their shapes dragons, bats, golf balls, castle walls and Casper the Friendly Ghost—all in white, bottle green and cobalt blue.

The weather swung between extremes: gentle snows of coin-sized flakes, horizontal sleet, encrusting ice, screaming katabatic winds, and stiletto rays of polar sunshine, all in one day. We set and struck sail regularly, climbing high into the 10-story rig—a bird's-eye view few have shared. Aloft in the tops, I felt decidedly alive with the vivid scenery seeming to seep into my lungs. The sailor's work is spiritual amid such grandeur.

Known as the "Kodak Crack," picturesque LeMaire Channel cleaves peaks thousands of feet tall, each snow-tipped as if with frozen meringue. Vast overhangs of ice threaten to plunge into the black water. Ominous ice hazards screeched along *Europa*'s trembling hull.

With engines off and sails set, we moved with the wind. The crew gathered in the warm deckhouse to read and play cards, but the ripple of the bow wave, the bark of seals, the gurgle and suck of the sea under blue icebergs drew us always to the rails, only two metres above the water. The quiet of the sailing ship placed us closer to the abundant traffic of life, which in the midst of such desolation was a constant marvel.

Innumerable penguins zipped past, seabirds spun endlessly round the ship like a mobile. Seals lolled on icebergs and beachfronts beneath snow banks were tinted lemon-lime and raspberry-pink by polar lichens. Elephant seals—some up to six metres long and four tonnes in weight—lounged, scratching one another's heads and hides with surprisingly adroit flippers, burping and farting with the exuberance of frat boys.

Like steam-powered submarines, whales chuffed past, their lungs, like bellows, moving roomfuls of air, with every breath suspended in misted clots above the mirrored sea. They raised their heads above the sea, "spy hopping" to better view us. Still shy from whaling days, their dark eyes are devoid of blame. Periodically, they would disappear, leaving only a rippling blank of water, a metaphor of their likely fate should humans once again find them unworthy of reprieve.

But the least adapted of all Antarctic life thrived, as well. At 65° south we visited the 12 Ukrainians at remote Vernadsky Base. These men will be isolated here for a full year with new experiments, old letters from home, and "gorilka," their homemade vodka. Steeped in red peppers, its fiery strength should never be doubted.

A short day's sail away is Her Majesty's (and probably the world's) loneliest post office—Port Lockroy: population 2. These British residents live for the three-month "warm" season in the aging tarpapered hut with no heat, power, or running water. They melt beach ice for drinking water between counting penguins and hand-stamping an astonishing 40,000 postcards dropped from passing tourist boats.

As *Europa* weighed anchor to again challenge the Drake Passage and return to Tierra del Fuego, I pondered the pull of these stark, polar regions. What draws people to live and work here? What calls strangers to this strange land? Both visitors and volunteers are the ties that bind this continent to the rest of the world, transient citizens of a land that guards no borders and prints no passports, where no bands play its anthem. It belongs to no one; and it belongs to everyone. And if it calls to you, go. ❑

Bark *Europa* is based in The Hague, Netherlands. The ship will sail Dec. 6 and 28, 2005, and Jan. 21 and Feb. 13, 2006, from Tierra del Fuego, cruising the Antarctic Peninsula and returning via Cape Horn. The cost for the three-week cruise is about $6,944, including meals and accommodations in two-, four-, or six-berth cabins. For more information, visit http://www.barkeuropa.com.

PHOTOGRAPH BY TODD JARRELL

Europa *rests at her moorings in Ushuaia*

Signing aboard the tall ship Picton Castle, *Todd Jarrell produced a Public Radio series from a 20-month, round-the-world adventure, later published as the award-winning audiobook* Slow Dance with the Planet. *Passion for world culture has led Jarrell to adventures in 50 countries across the seven continents and 70,000 miles of tall ship ocean voyaging (at 5 mph!), writing for international print, radio and television outlets including National Geographic; CNN; NPR; BBC; and PBS-TV. He resides, landlocked, on a small farm east of Nashville, Tennessee.*

APS Member Donates Shackleton Flag

American Polar Society member Dr. John M. Levinson of Rockland, Delaware, has donated a historic Union Jack flag to the Scott Polar Research Institute at the University of Cambridge. SPRI has an extensive collection of Sir Ernest Shackleton's artifacts and documents.

Shackleton took the flag on his Nimrod expedition to Antarctica, during which he and two colleagues—on 9 January 1909—reached to within 97 nautical miles of the then still unattained South Pole.

Levinson purchased the flag at Christie's in London in April 1997 for 25,300 pounds sterling. Until the Christie's sale, a member of Shackleton's family owned the flag.

"It is a unique piece of history," Levinson told *The Polar Times*. "I had it for seven years. I enjoyed it, but I always felt, 'This is an English artefact of great importance and it belongs in England.'"

Levinson worked as a surgeon on tourist ships, cruising largely in Arctic and Antarctic waters, for 35 years. His concerns about the safety and medical care of tourists in polar regions led to the world's first conference on the subject, held at SPRI in October 1995. Subsequently he published *Safe Passage Questioned: Medical Care and Safety for the Polar Tourist*. Levinson was president of the Explorers Club in New York City from 1985-87.

Robert Headland, archivist and curator at the Scott Polar Research Institute at the University of Cambridge, England, stands next to the Shackleton flag donated by APS member Dr. John M. Levinson. • *Photo courtesy of* Polar Bytes, *the publication of the Friends of the Scott Polar Research Institute (www.spri.cam.ac.uk/friends/)*

Professor Julian Dowdeswell, Director of SPRI, said: "We are delighted with Dr. Levinson's kind donation. Our Institute is the home of a number of Shackleton's artifacts and documents, and we are very happy to have another, such important addition." ❑ *by Jeff Rubin, with material from a University of Cambridge press release, dated 7 February 2005*

Antarctic Oil Painting Shrouded in Mystery

The Associated Press, **NEW HAVEN, Conn., by Matt Apuzzo**—As art restorers in London inspected a 230-year-old painting by master landscape artist William Hodges, they noticed the canvas was thicker in some areas than others.

Using an X-ray machine, they peered behind the lush greens of New Zealand and discovered the oldest known painting of Antarctica.

> *The discovery ignited a discussion over why Hodges endured frigid temperatures, fog and wind to capture the first image of the frozen continent, only to paint over it months later.*

The X-ray revealed two icebergs, painted during Captain James Cook's historic expedition below the Antarctic circle. Until the National Maritime Museum in London made the discovery last year, historians believed that only sketches of the frozen continent had been produced.

"In the history of art, there's nothing comparable," said Angus Trumble, curator at the Yale Center for British Art, where the Hodges painting and the accompanying X-ray are on temporary display for their only U.S. appearance.

The discovery ignited a discussion over why Hodges endured frigid temperatures, fog and wind to capture the first image of the frozen continent, only to paint over it months later.

Cook had set out in 1772 to discover "Terra Australis Incognita," the mythical southern continent. Hodges was aboard the *HMS Resolution* to document the voyage, on which Cook spent nearly four months circumnavigating Antarctica.

"It put the final nail in the coffin that there wasn't a big land mass there suitable for commercial exploitation," said Brian Sandford, head of the U.S. chapter of the Captain Cook Society.

Painting the polar landscape would have made sense, experts agree, as it had never been seen before. And forensic analysis showed that Hodges took the time to complete the work. Yet when the *Resolution* left Antarctica and made its first stop in New Zealand, Hodges immediately turned on his iceberg canvas and painted his "View in Pickersgill Harbour, Dusky Bay Sound, New Zealand."

One theory is that the brutal weather destroyed some of Hodges' supplies, forcing him to reuse a canvas. Others suggest the bleak polar landscape didn't fit the popular style.

"Perhaps he said, 'Who paints icebergs?'" Isabel Stuebe, a Hodges biographer and scholar, said. "It wouldn't have met the standards for classic landscape composition. There was nothing in the foreground. It was more of a record of something as a scene rather than an artistic composition."

> *One theory is that the brutal weather destroyed some of Hodges' supplies, forcing him to reuse a canvas.*

Or maybe four months in Antarctic waters were enough to make Hodges want to erase the artistic record of such a a perilous voyage.

"In a way, it's very understandable for Hodges to immediately be determined to paint this lush safe haven of New Zealand," Trumble said.

The painting, which is part of the traveling exhibit "William Hodges, 1744-1797: The Art of Exploration," is on display at Yale until April 24. It then moves to the Auckland Art Gallery in New Zealand. ❑

Norwegian Whaling Increase Condemned

***PRNewswire,* BOSTON, 20 April 2005**—Whalewatch, a coalition of more than 140 non-governmental organizations from over 55 countries, has condemned Norway over its decision to allow whalers to kill almost 800 minke whales by the end of August. Norway's whaling season began yesterday, and the quota of whales targeted for slaughter, up from 670 in 2004, is the largest set by the Norwegian government since it resumed whaling in 1993 in defiance of the existing ban on commercial whaling that came into effect almost two decades ago.

Speaking on behalf of Whalewatch, Kitty Block, from the HSUS/Humane Society International (HSI), said: "By increasing the number of whales that it plans to kill this year, Norway is once again defying world opinion and flouting the existing international ban on commercial whaling. Norway should be condemned for sanctioning the cruelty that whaling represents. Whalewatch is calling for an end to all commercial and 'scientific' whaling, as there is no humane way to kill a whale at sea."

For the first time, Norway's whaling boats will sail without a government inspector aboard. These officials have been replaced with an automated data-collection mechanism called a "Blue Box" that is not expected to be able to verify, as effectively as a human, that whales are killed humanely.

The start of Norway's whaling season coincides with the recent return of Japan's whaling fleet from the Antarctic Ocean, having killed up to 440 minke whales for "research" in a designated whale sanctuary, with another scientific whaling program currently taking place in the North Pacific coastal waters off Japan. According to recent reports, Japan plans to double the number of whales that it will kill each year in the name of research.

A comprehensive report, "Troubled Waters," released by Whalewatch last year, provides hard scientific evidence into the welfare implications of modern whaling activities. It supports what has long been believed, that these highly evolved mammals experience extreme trauma and suffering in the hunt and kill process. Whales can take over two minutes to die after being harpooned and in some cases for over an hour after the harpoon has struck.

Although commercial whaling has been banned since 1986 under the International Whaling Commission (IWC), over 25,000 whales have been killed since this ban came into force and more than 1,400 whales are expected to die this year alone. Japan and Iceland kill hundreds of whales between them each year for "research." The whale meat is then sold commercially.

In June, the IWC will hold its annual meeting in Ulsan, South Korea, where pro-whaling countries may have a voting majority for the first time since whaling was banned in 1986. Whalewatch will be lobbying to keep the ban on whaling in place and prevent any compromise deal that could bring back commercial whaling. Broadcast footage, color photographs and interviews available on request. Please contact Susan Sherwin, WSPA, at 508-879-8350, ext. 21. ❑ ***SOURCE: World Society for the Protection of Animals***

Whale Boycott Urged

***The Herald Sun online,* 16 May 2005**—Australia should suspend trade talks with Japan if it goes ahead with plans to kill humpback whales in Antarctic waters, said Australian Greens Senator Bob Brown.

Japan will ask the International Whaling Commission's meeting next month to extend its quota of about 440 minke whales a year to humpback whales—an endangered species.

Federal Environment Minister Ian Campbell yesterday described Japan's plan as disastrous, and said it risked damaging international relations.

Senator Brown said governments on both sides of the Tasman would need to consider punitive action against Japan, including the suspension of any talks on free trade agreements and a challenge in international courts.

He also said the plans would test the Federal Government, which was set on a free trade agreement with Japan. ❑

Alaskan Natives in Remote Villages to Sell Traditional Handmade Crafts Over the Internet

***PRNewswire*, Philadelphia University, PHILADELPHIA, 9 June 2005**—In a remote Alaskan village, Brenda Gilbert has been making traditional crafts for most of her life, creating moccasins and barrettes, many with intricate beadwork, to give as gifts or to use for trade. Soon, under a new cooperative program, Gilbert and other Alaskan Natives living far from cities will be able to sell their handmade crafts throughout the world.

On Oct. 1, *http://www.arcticways.com* will be up and running, offering Gilbert and others living in the vast interior of Alaska an opportunity to sell their crafts worldwide and bring some money into their cash-poor villages.

Steven Dinero, a Philadelphia University professor of human geography, with the help of a $600,000 grant from the National Science Foundation, spearheaded the project. Three years ago, Dinero started making visits to the remote outposts of Arctic Village and Nulato, with the hope of creating a way for the people living there to earn some money from their crafts.

"We're working with poor native communities that have little access to the resources of the rest of Alaska and the lower 48 states," Dinero says. "We're trying to take advantage of opportunities that the Internet and the information economy offer that don't rely on the road system.

In Gilbert's town of Arctic Village, with a population of about 160, generations have used moose and caribou hides, wood and other natural materials to make moccasins, vests, gloves, snowshoes and fish spears. In modern times, however, some of the native crafts people have added cell phone and checkbook holders to their list of wares.

Handmade moose hide gloves riding several inches past the wrist for maximum warmth, with intricate beadwork, will cost $200 and up on the website. Traditional Alaskan native moccasins that lace up will cost $150 or more. Smaller leather items, such as pouches and cell phone holders, will cost $25 to $40, and leather barrettes and beaded earrings will be priced at about $40 to $60.

The natives of the Alaskan interior—roughly the size of the Midwest—are among the most northern band of American Indians, Dinero says.

In this rough interior, the towns are off-road and remote. For hundreds of years, residents lived off the land, hunting and fishing and making their own homes. But as the culture became more open to modern ways, most natives are no longer able to sustain a lifestyle of living off the land.

They may still hunt, but must pay $5 a gallon for gas for their all-terrain vehicles. And because of their remote locations, food and other supplies are very expensive. Salaried jobs are few—a postmaster and teacher, perhaps.

The website will allow Alaskan Natives from over a large stretch of land to contribute crafts to sell via the Internet. A coordinator will travel to small villages to try to bring crafts people on board, working to negotiate prices and forge economic agreements where mostly an informal economy now exists.

The NSF grant also included funds to run computer camps for Alaskan high school students focusing on e-commerce and web design. Two camps were held last summer, and two more are scheduled for this summer, each including 15 to 20 students. The computer camps are designed not only to train students to work on the "arcticways" website, but to prepare them for a range of high-tech opportunities in the work world.

"We don't expect to make a lot of money off this website," Dinero explains. "But we want to bring some hope into these communities, which tend to be depressed, and bring some opportunities for the next generation." ❑

Searching For 'Ultima Thule': Part Three of Three

By Peter Skafte

PHOTO BY PETER SKAFTE

Mara Borland with hand on cairn on Ultima Thule Island, 2003. (Inset: Borland reading note from cairn on Kaffekubben Island, 2003.)

What a wonderful thing, to have a lifelong wish granted. When our expedition found a small rock barely sticking out of the water a mile north of Kaffeklubben Island in 1996, we all believed we had found Oodaag Island, the northernmost point of land in the world. It had taken me several decades to realize my dream. Imagine the surprise when I learned in 2002 that our expedition had missed finding Oodaag and had instead discovered an entirely new island farther north. It happened this way. My team member, Galen Rowell, wrote an article about our journey for *Life* magazine in1997, called "The (Very) Top Of The World," which aroused great interest among the members of the Geodetic Institute in Copenhagen. Comparing the known GPS positions for Oodaag Island and the pictures of the island in the magazine, they concluded that we had discovered a new island. Two years earlier the Danish Polar Centre made an announcement with the headline: "New Islands, New Northernmost Point of Land on Earth Discovered off Northern Coast of Greenland." The announcement stated: "After extensive review of the available information, we have reached the following conclusions: The American Top of The World Expedition's 1996 [discovered] island is the most northerly documented point of land on earth. Its location and physical description have been constant over the last five years."

It was exciting news, but I already knew that there was another more substantial island hidden in the sea ice farther north. While flying along the north coast of Greenland from Bliss Bay to Cape Morris Jessup in 1998, I photographed a distinct island a few miles north of Kaffeklubben. Could this new island be the real Ultima Thule? I kept the photograph as a bookmark on page 64 in Eigil Knuth's *Independence*, just as a reminder if I should ever get another chance to visit the north coast of Greenland. On page 64, Eigil Knuth explains that on one journey, he would wake up his Inuit companion every morning by quoting these lines from Kipling's poem, "The Explorer":

> *Something hidden, go and find it.*
> *Go and look behind the ranges*
> *Something lost behind the ranges*
> *lost and waiting for you. Go!*

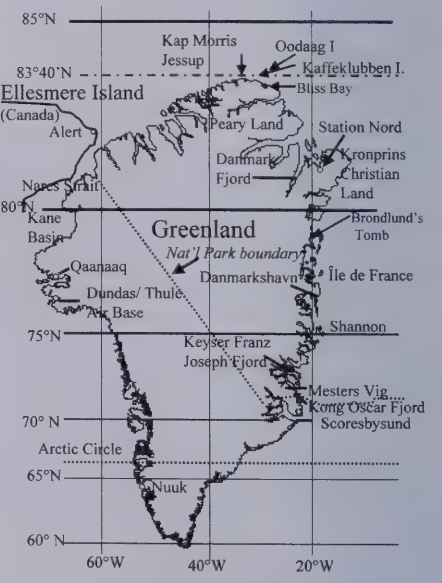
July 3, 2003, I was back to "go and look" with a new team, organized by Dennis Schmitt. He and I were the only ones in the group who had also been on the 1996 expedition.

Once more, Johan Skirnisson flew our expedition to Bliss Bay with nine people. The following day everyone hiked the 11 miles to the coast south of Kaffeklubben Island. "We are better prepared for the sea ice this time," I thought. Six of us had breathable chest waders to negotiate the innumerable melt water pools, which covered the ice. But the ice conditions were very different from those we encountered in 1996. Three hundred feet of open water along the shore separated us from the ice. I discovered a shallow inlet between the shore and a small island from where we could walk directly onto the sea ice. The water was only two to three feet deep, but the bottom consisted of soft mud. I decided to put on snowshoes and demonstrate that I could walk across the inlet without sinking into the mud. To the comic relief of everyone, the snowshoes acted like great suction cups. After a few steps I lost my balance and fell with a splash in the water. I tried again without these contraptions, but again I ended up in the water when my wading shoes became stuck. I eventually managed to get across in the bare stocking feet of my waders. Only those expedition members who were equipped with waders were able to ford the icy water in the inlet. In the group were Mara Boland from California, Dr. Merilyn Geninatti from Arizona, Ans Hoefnagel from Holland, Dr. Frank Lansburger from New York and Dennis Schmitt from California.

We now entered the incredible world of melting sea ice. To the north, the horizon was lined with pressure ridges where ice was piled upon ice. A mirage made these features seem like enormous buildings. This year we had to negotiate densely compacted snowdrifts and hundreds of melt water pools that ran east-west in long bands. Our chest waders kept us dry, but the bottoms of the pools were uneven and very slippery. Only Frank had brought his crampons; all the rest of us had to exercise great care to keep from falling. Furthermore, I regretted neglecting to bring along a javelin, my "staff of life" on many northern adventure treks *(see accompanying article, p. 20)*.

When we reached Kaffeklubben Island, Mara and I checked the island's two cairns for messages. The first men to visit the island on July 6, 1960, had built a cairn on the southern end of Kaffeklubben. That was 43 years, to the day, before our 2003 arrival. A U.S. Geological survey group, which included William Davies and Daniel Krinsley, had arrived in two army helicopters with their crews. Eigil Knuth had accompanied them to search for archaeological sites. The northern cairn, which is called the Greenlander's cairn, was built May 22, 1991, by Peter Brandt's expedition north around Greenland. Like others who had passed this remote place in the winter season, Peter Brandt's team looked in vain for signs of Oodaag Island.

To get back upon the sea ice from Kaffeklubben, we crossed a 150-foot wide pool of melt water,

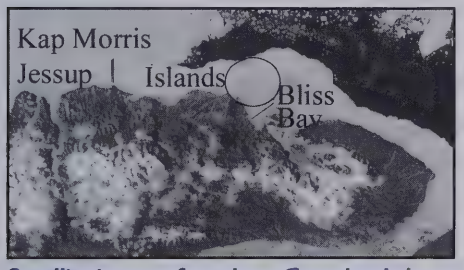


Outline map of Greenland, Mercator Projection emphasizing northern Peary Land with distortion, drawn by D. Norton, 2004.

which surrounded most of the island. Only one spot was shallow enough to ford. Our first goal was to check a GPS location of a possible island which had been observed by another expedition during a fly-over in 2001. After a few hours we arrived at the specified coordinates. All we could see was an ice and snow ridge several hundred feet long and about 20 feet high. It is possible that ice had thrust up over a sea mound, or a huge compacted snowdrift had covered the area. Dennis took the time to examine the entire perimeter of the ridge and reported that he had found a few small rocks. The rest of us had lunch.

Our search continued to the north. In the jumbled ice, shadows played tricks on my eyes. Several times I was sure I saw an island, but each time it proved to be just another shadow. Suddenly Mara pointed and said, "Do you see the green bushes over there?" "No, you have to be hallucinating," I replied. "But I see it too," said Ans. Their vision soon vanished and again there was only ice, water and silence. An hour later we spotted something that could be an island, but at closer inspection it turned out to be a patch of dirty ice with a large hole connecting to the ocean below.

We had now walked and waded north continuously for about 10 hours, but we decided to search toward the east before returning to Kaffeklubben Island and the mainland. The strain from concentrating on not slipping and falling while fording the melt-water pools affected some of us. To become soaked this far from camp could mean disaster.



Satellite image of northern Greenland, showing Bliss Bay, Kap Morris Jessup, and the vicinity of Kaffeklubben, Oodaag Island, and other candidates vying for recognition as Ultima Thule.

Then from the top of an ice mound, Mara and I spotted a golden brown dome of land between two hills of ice. "There it is!" we shouted. Dennis, Frank and Merilyn were up ahead. They had not seen the island yet, and they probably suspected we were having another hallucination. But this time the island was for real. Soon we were all standing around the new Ultima Thule, which is approximately 120 feet long, 60 feet wide, and 12 feet high. From its shape, I recognized it as the island I had photographed from the air in 1998. But back then I had no idea of its precise location. Marilyn looked at her GPS and said, "Our location is 83° 42 .052' N, and 30° 38 .494' W."

PHOTO BY PETER SKAFTE

Ans Hofnagel walking in water on ice, 2003.

Together we built a small cairn on top of the island. Each person selected a few rocks for the cairn. I am glad that nobody waved flags, and we decided not to leave a message in the cairn. Because, as Frank exclaimed, "Blessed is the anonymity of Ultima Thule!"

We rested and enjoyed our luck. Today when satellites can photograph every square inch of the earth there are not many land features left to be discovered. In just a few weeks the island would disappear under a blanket of windswept snow and once more become mysterious and elusive. But surely there will be another summer when someone will come looking.

I remember to pick up that "special" stone, to be the topic of some future conversation about this journey, in search of the unknown. Before we leave, many pictures are taken, and each team member is videotaped talking about their experience. Everyone makes stilted statements to the camera. Perhaps only a poet could express the meaning of this moment. As Henry Wadsworth Longfellow said:

Ultima Thule! Outmost Isle!
Here in thy harbor for a while
We lower our sails, a while we rest
From the unending, endless quest. ❑

On behalf of all *Polar Times* readers, we wish to extend our gratitude to Peter Skafte for sharing with us, these past three issues, an account of his and his colleagues' adventures in seeking and finding the northernmost projection of Arctic land. It's a great tale, instructive and entertaining as well. Thank you, Peter.—Editor

PHOTO BY PETER SKAFTE

Ultima Thule from the air in 2003, with open lead in the background.

PHOTO BY PETER SKAFTE

Twin Otter over Bliss Bay.

My Kingdom for a Javelin!

by Peter Skafte

During the Euro-American Expedition to the north coast of Greenland in the summer of 2003, two of our team members became stuck on a small island in the middle of a swollen river. If they fell while crossing the icy waters, they were likely to drown. The rest of us attempted to help Andrew and Alan. We had ropes, but I had brought something unusual: my trusted javelin. We managed to get the javelin over to the island. Andrew soon made it across without incident, but when Alan's turn came, he hit a deep spot in the river and fought to stay upright.

"Lean on the javelin. Face upstream. Don't look down!" I shouted. My words were barely audible above the roar of the rushing water. Frank, who stood beside me, repeated my instructions in a booming voice that was finally understood by our desperate team member. I saw him plant the javelin up-river with both hands and regain his balance. Twenty seconds later he was safely on shore.

The danger of crossing rivers in the high arctic during the summer is often underestimated. A warm spell in the weather can double the flow of water in a matter of hours. Few people can judge when the water level of a rising river becomes life threatening. There are simply too many things to consider, such as the various speeds and depths of the water, the consistency of the stream bottom, and a person's height and weight.

I had learned some of these lessons as a teenager while trekking north of the Arctic Circle in Sweden. In those days, I was a fanatical javelin thrower and never left on vacation without my spear. When a local Sami reindeer herder saw me get off the train with my javelin, he asked to look at it and said cryptically, "You won't need that for sports events up here, but it might save your life." I soon found out what he meant. On certain days of my trek, I had to cross more than ten swift mountain streams. This would be impossible without a long staff or javelin to lean on. (Ski poles are neither long enough nor strong enough for this purpose.) At one river crossing, I slipped on algae-covered rocks and was instantly swept downstream. It was a helpless feeling to be tumbled over the rocks while trying to get rid of my backpack. Fortunately, the water carried me into an eddy and I escaped a watery grave.

Later that day, I recovered my backpack and my precious javelin. Most of my food had been spoiled by the water, so now the javelin became useful as a fishing pole. An older and more experienced trekker showed me that a pair of woolen socks over my tennis shoes provided excellent traction on algae-covered stones. I was also warned never to tie myself into a rope when crossing a river. "If you are swept off your feet and the rope snags under a rock, the force of the water will most likely drown you," he said.

Since then I have always brought a javelin when I travel to the high Arctic in summer. On my first Greenland expedition, I learned how a javelin was useful not only for river crossings but also for pushing smaller ice floes out of the way of our Zodiac rafts. In 1996, I found more uses for my spear: as a support staff on the melting ice sea ice, as a flagpole to signal our location to two lost trekkers, and as a probe for crevasses. But its most unexpected application was holding our radio antenna wire. In a land with no trees, branches, driftwood, or any object higher than one's ankle, the javelin makes an excellent tower.

Traveling with a javelin does have it drawbacks. Airline security agents regard it as a possible terrorist weapon, so one is advised to enclose it in a plastic pipe and check it as baggage. Expect uninitiated expedition members to snicker and say, "Are you going to kill a polar bear with that spear?" Most people would regard the javelin as a foolish and useless encumbrance on a trip to the frozen north. But Alan and Andrew, at least, have changed their minds. ❑

Peter Skafte holding his trusty javelin on Kaffeklubben Island

Adventurers Conquer Arctic, and History

***Washington Post Foreign Service*, TORONTO, 26 April 205, by Doug Struck**—Fighting a shifting ice pack and open water that threatened to swallow their dogs, a team of five adventurers reached the North Pole at 9:32 a.m. Tuesday, just five hours faster than the record claimed by explorer Robert E. Peary almost a century ago.

The exhausted team members, guided by an American-born woman, Matty McNair, cracked open a bottle of champagne they had carried more than 420 miles across the ice in a grueling attempt to clear Peary's name from century-old doubts that he was able to make it to the pole in just over 37 days.

They toasted, hugged and set up their tent to get some sleep. Then they heard voices.

"It was very surreal," Tom Avery, 29, the British mountaineer who organized the expedition, said by satellite telephone. Outside the tent were three Russians and a Czech who had sledded only the last 50 miles, he said. "They had been following our tracks."

Then, Avery said, "a huge Russian helicopter came and landed right next to us." It had come to pick up the other team, and it was full of Russian tourists "walking around taking photographs of us. And then they got in the helicopter and flew away."

Left behind was a team of adventurers who had pushed themselves and 16 huskies to the limits of endurance to reach the top of the world. They did so in 36 days, 22 hours and 11 minutes, disproving the critics who said Peary's trip in 1909 was impossible.

Gilbert M. Grosvenor, chairman of the National Geographic Society, said McNair s team had "wiped out 94 years of doubt" about a major aspect of Peary's achievement.

"We still don't know for sure" if Peary was where he claimed, Grosvenor said from Washington. "But now we know for sure that it can be done in 37days."

McNair, 53, was born near Philadelphia but now lives on Baffin Island in Arctic Canada. Her lust for adventure has taken her to the North Pole once before and to the South Pole three times. She and Avery were joined by three men from Britain, South Africa and Canada.

McNair slept while Avery spoke on the phone. "We're all ... very, very exhausted" he said. "It's the most physically demanding thing I have ever done. Lifting a wooden sledge over rough ice and pressure ridges—it's been very, very tiring. We all have aches and pains and bruises. But it feels fantastic to be here."

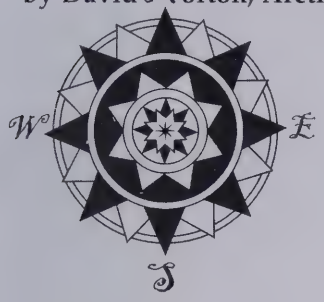
The team left the northernmost tip of Ellesmere Island, on the edge of the Arctic Ocean, on March 21, passing a sign erected by Peary that pointed toward the pole. They had built wooden sleds to replicate those used by Peary, each of which carried up to 650 pounds of supplies. Often, they had to pull the sleds over slippery blocks of blue ice as the dogs clambered ahead.

"It sucks all the energy out of you when it is minus-40 degrees," Avery said. "You're trying to get out of your sleeping bag, and there is ice everywhere. Getting dressed ... you really have to concentrate. It was exhausting ... but we hung in there."

Aircraft dropped supplies to them at four points, just as Peary had sent ahead sleds to replenish his supplies. Peary started with 19 sleds, 24 men and 133 dogs. The facts of his last leg toward the pole have always been mysterious. Peary's unorthodox navigation, secretive behavior and reported speed raised suspicions. *(Continued at bottom right)*

Due North

by David Norton, Arctic Editor



Medical Disconnects and Polar Amateurs

While working on contributions to this issue of *The Polar Times*, health matters required me to disconnect for a while. Following a detour into the intricacies and expertise of our modern medical industry, I am now learning to get around on the artificial pieces comprising a total hip replacement. If I am diligent with rehab exercises, physicians should judge me strong and agile enough once again by early July to join an expedition in search of Arctic dinosaur fossils.

The rate at which people my age and older are choosing "bionic" joints makes it probable that several readers of this column are ahead of me in personal experience with joint replacements. As a follower of those pioneers, I marvel at how thoroughly all the phases of medical care have treated me so far. Being out of practice with major medical procedures, I decided to approach mine as a learning adventure, from which to report back.

A few transitions during the course of my medical adventure took me by surprise. The first surprise began on 10 April within hours of deciding to follow former patients' encouragement to undergo surgery prescribed by medical experts and having my surgeon book the operating room for the 16 May—six weeks off. Naively, I expected to use those six weeks freely to accomplish things that needed doing before losing mobility for a month or so following surgery. As it turned out, pre-surgical physical exams, blood tests, X-rays, anaesthesiologist's screenings and so on took an average of four weekday appointments each of the four weeks preceding surgery. Despite intending to take care of some scientific business on a trip to Barrow, I never managed to find three successive days uninterrupted by medical requirements during which I could make that trip. Simply put, pre-surgery requirements are unforgiving and time-consuming. Next time, I'll plan on surrendering a month to those requirements and will advertise my unavailability during that month to colleagues and students.

Another surprise was the numbing repetitiveness of tests, questionnaires and procedures. In addition to my orthopaedic surgeon's lead role, I had a primary care physician, an internist, a urologist and a dentist all taking interest in procedures affecting me, as one of their patients. As joint replacement involves surgery and residence in hospital, enter Anaesthesiology, hospital administration, billing, and nursing departments. Further, for recovery and post-operative care, enter Physical Therapy, Occupational Therapy, Pharmacology and the medical department of my health insurance company. The Alaska Blood Bank supervised my donation of two units of "autologous" blood ahead of the surgery, so that I might draw upon those reserves as needed during or after surgery.

Somehow, we managed to navigate the complex directions related to diet, last-minute blood tests, showering, fasting, withdrawals from all pain medication, packing minimum personal stuff for a five-day hospital stay and to arrive with the right pre-admission bracelets the morning of surgery. No more surprises until later that day.

After surgery, I fell under routines for monitoring vital signs and being ministered to by nursing staff. Nurses came on watch for 12- hour shifts. Surgery day's surprise was the fierce authority with which each nursing watch assumed charge of patients' care. I might not have noticed this ferocity except that one monitoring device to which I was attached developed a malfunctioning alarm beep. At one shift change, a new nursing crew decided to bypass the device, in favour of letting us patients get some overdue sleep. Next nursing shift went right back to using the machine, beep and all. In this sequence, there was a hint of competition. Some 24 hours later, another shift of nurses finally fitted the machine with new components that worked silently.

This discomfort aside, I could not help growing fond of all the nurses' zeal to get us patients back on our feet. Each nurse manifested that zeal in unique, endearing ways. One nurse celebrated navigating his patients past specific milestones on their way to recovery, such as fever suppression, resumption of solid food intake or weaning us from pain medications. Another chief nurse shared my love of laughter and funny stories, so whenever she could spare time from other patients, we brightened the ward by one-upping each other with favourite punch lines. A third nurse had an uncanny ability to sense my discomforts, roadmap-style, as if she herself had lived through arthritis and hip replacement. Her youth and brimming good health made me ask whether she'd ever been on the receiving end of nursing care such as she was giving. As I expected, she admitted that only her imagination fueled her empathy. Come to think of it, how many surgeons performing joint replacements, or physical therapists and nurses tending patients anywhere, have themselves undergone joint replacements?

The biggest medical "disconnect" followed the chief nurse's announcement on the second day after surgery that I'd rebounded well enough to go home the following day. Apparently, early discharge was a consensus decision among surgeons, nurses and physical therapists. My last 24 hours at the hospital, a hectic régime replaced the unhurried one to which I had been adapting. It became less clear who was in charge. We kept hoping my wife would be briefed on what she needed to do during my home convalescence. For hours nothing happened, then a flurry of activity erupted. Crutches, a special seat for the shower stall and gizmos to allow me to dress without flexing my new hip too far were delivered to the room amid bouts of signing papers. Abruptly the surgeon himself arrived, beaming, to pronounce his delight with my readiness to leave and that I should do fine improving at home for a fortnight. In a final burst of swapped jokes, the head nurse who particularly enjoyed them accompanied us to the parking lot and wished us well. We drove home via the pharmacy to load up on convalescent prescriptions to last until I would revisit the surgeon to be set forth on my next stage of regaining independence.

As my recovery proceeds at home, I've recognized parallels between how the various professional guilds devoted to health care conduct their business and how, as diverse polar specialists, we go about our affairs. Farfetched? Perhaps, but I submit that concerns we polar buffs take for granted can mystify outsiders just as some medical decision making mystified me. Barriers of obscurity are enemies common to both. People whose expertise lies elsewhere should be as concerned by polar climate change as we are, just as we polar buffs should be as concerned about health care costs as health professionals are. Amateurs are, I contend, the ultimate judges of our craft. Amateurs' judgements on the success of their hip replacements decided me to go ahead—as much as did medical opinions.

How are amateurs judging polar scholarship these days? ❑

(Adventurers Conquer Arctic, continued from left)

The final hours of the trip may have also involved competition between Peary and his black aide, Matthew Henson, according to some historians. Peary returned to earn fame as a writer and lecturer; Henson worked as a janitor for 40 years at the American Museum of Natural History in New York.

This year's expedition also faced last-minute obstacles, Avery said. The Arctic spring created sudden fissures in the ice, and the wind moved the ice pack.

"We were battling a negative ice drift," Avery said. "We had been doing the equivalent of 28 miles over the ground in the last day, but the ice was moving south.

"Suddenly, about two miles from the pole, we started to come across open water. One of the sledges ended up getting dunked, and some of the dogs as well," Avery said.

Exposure to the Arctic Ocean can bring quick hypothermia and death to humans, but the dogs shake it off, he said. He praised the team's huskies as "incredible animals" and said traveling with them was "something I will probably cherish most" from the trip.

"We were really fighting until the end," Avery said. "Even so close to the pole, I wasn't so sure we would make it."

Ironically, as soon as they reached the pole, the ice pack ceased drifting south.

"Sedna, the Inuit godess of the sea, is smirking," Avery said. "That's what polar travel is all about." ❑

Barrow Global Climate Change Research Facility

A World Class International Research Facility in the American Arctic

Compiled by Harley Hightower, AIA
(Source: Programming and Planning Documents Prepared for the Project)

The Barrow Global Climate Change Research Facility (BGCCRF) is under construction, and Phase I is scheduled for opening for Arctic researchers in 2007. The opening will correspond with the 125-year anniversary of the International Polar Year (IPY) scheduled for celebration during 2007–2009.

The BGCCRF will be located south of the Ukpeagvik Inupiat Corporation (UIC)–Naval Arctic Research Laboratory (NARL) facilities on the shore of Imikpuk Lake, approximately 200 meters from the Arctic Ocean.

The current program provides for a building complex of 88,930 gross square feet (gsf). The design and construction are scheduled for five phases as described below.

Phase I: Research/Education Facility—20,930 gsf

Phase I includes research laboratories, administrative offices, information technology (IT) spaces, and building support.

Phase II: Staging, Maintenance, and Warehousing—16,000 gsf

Phase II includes five staging bays, four storage bays, all-terrain vehicle storage, general storage, two maintenance bays, and science support.

Phase III: Research and Support Spaces—20,000 gsf

Phase III includes research laboratories, research support areas, conferencing areas, dining facilities, a shipping and receiving area, and support functions.

Phase IV: Research Laboratories—20,000 gsf

Phase IV includes laboratories and science support facilities.

Phase V: Housing—12,000 gsf

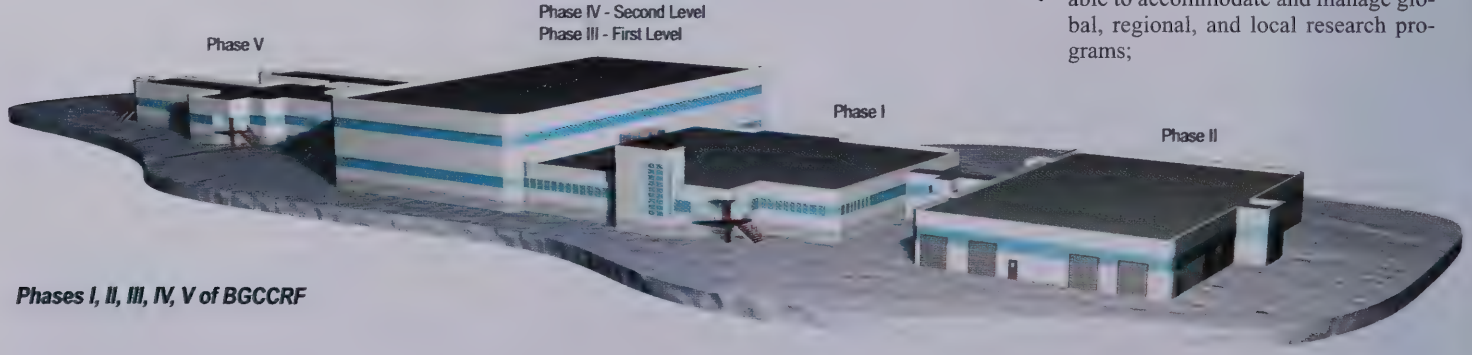
Phase V includes single, double, and four-person sleeping rooms with a 40-bed capacity, along with a recreation room, quiet room, and laundry.

BGCCRF and UIC-NARL Location Map

Photograph Copyright AEROMAP, U.S. Date of Photography: 07/20/03

The Arctic is strongly influenced by, and in turn drives, global environmental change. Therefore, the entire earth climate system cannot be understood without better understanding the Arctic, making it one of the last frontiers of environmental research. The lack of modern research facilities around the Arctic Ocean severely impedes developing an integrated global observation system to better understand climate change. The establishment of the BGCCRF in Alaska on the shores of the juncture of the Chukchi and Beaufort seas will fill a large void in research support in the U.S. Arctic. The BGCCRF will become an important U.S. contribution to a comprehensive global observation system. The new science support infrastructure will be designed and constructed to accommodate both current and anticipated future research needs in the U.S. Arctic. For example, there is currently no capability to support continuous physical measurements of the Arctic Ocean or to support biological monitoring and experiments with marine organisms (e.g., krill and fish). The BGCCRF will be:

- capable of supporting studies of the atmosphere, ice-covered ocean, and land year-round;
- able to accommodate and manage global, regional, and local research programs;



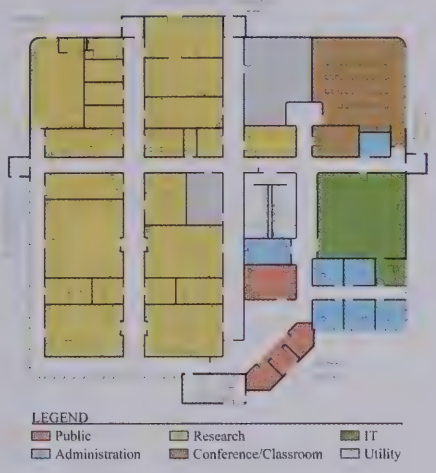
Phases I, II, III, IV, V of BGCCRF

- integrated into the worldwide flow of research data and information for the assessment and anticipation of global environmental change;
- able to provide telecommunications/IT services from field and automated equipment into the BGCCRF and from the BGCCRF to scientists' home facilities;
- responsive by adjusting its research activities to the feedback from new results;
- able to provide a year-round staff of experts thoroughly familiar with all aspects of research, engineering, research support, and logistics; and
- designed to integrate societal aspects for a sustainable future of human populations in the Arctic region.

Between 1949 and 1980, Arctic researchers were very active in the Arctic and in nearby waters largely because of the Barrow-based NARL. NARL provided easy access, laboratories and logistical support. NARL was closed in 1981; however, particularly during the past decade, Barrow-based Arctic research projects have been back on the upswing. The National Oceanic and Atmospheric Administration (NOAA) Climate Monitoring and Diagnostics Laboratory (CMDL) Barrow station was

The new science support infrastru cture will be designed and constructed to accommodate both current and anticipated future research needs in the U.S. Arctic.

founded during the 1970s and continues as part of NOAA's five-station global network for monitoring atmospheric composition. The North Slope Borough's (NSB's) Department of Wildlife Management (DWM) has conducted its own research for the past 20 years. The DWM also served as logistical provider for growing numbers of arctic researchers without other logistical support. In the late 1990s, the Department of Energy (DOE) Atmospheric Radiation Measurement (ARM) program (DOE's principal climate change research effort) created a Cloud and Radiation Testbed on the North Slope with atmospheric instrumentation located at Barrow and Atqasuk. The Testbed is now part of the ARM Climate Research Facility, a National User Facility. In response to growing researcher needs, the Barrow Arctic Science Consortium (BASC) was formed in the mid 1990s as a non-profit logistical support and community coordinating organization and received the endorsement of the UIC, the NSB and the local community college. BASC provides logistical support to National Science Foundation (NSF) researchers through a cooperative agreement and to others on a fee-for-service basis. UIC also dedicated 11 square miles of its land as the Barrow Environmental Observatory (BEO). NSF, with the concurrence of UIC, has asked BASC to manage the land for scientific research. This land that has been used for research for more than 50 years is now available to the larger research community through BASC and has been protected from development as the first zoned Science Research District in the U.S. Since 1981, the remains of the old NARL infrastructure sustained the scientific enterprise on the Arctic coast. But now, because of the rapid ongoing changes in the Arctic, these inadequate facilities are about to be replaced.

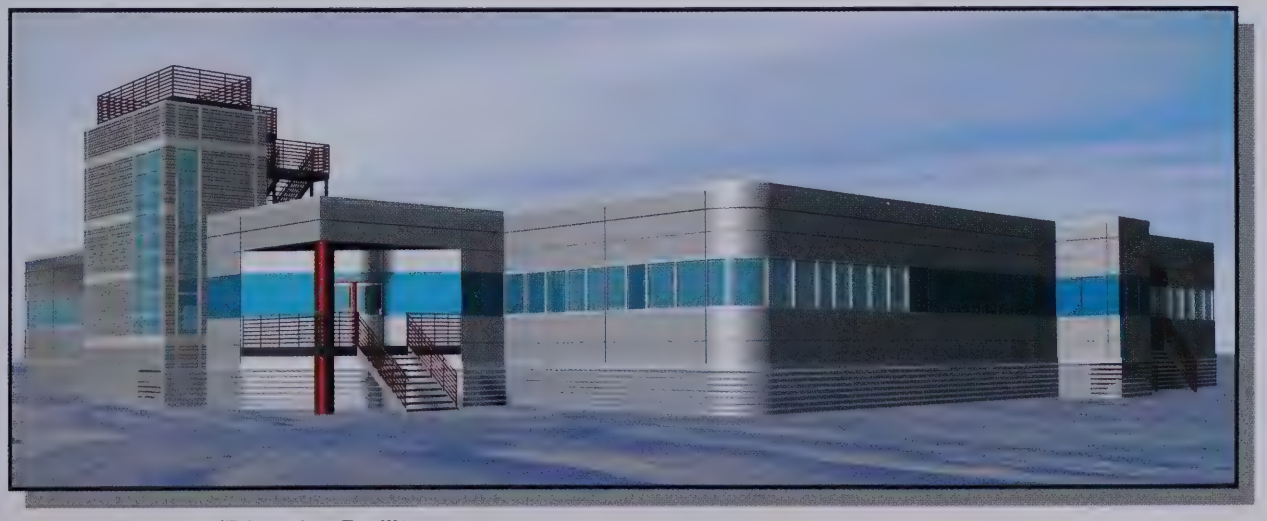


Phase I Research/Education Facility Floor Plan

Local Native people have served in many support capacities for scientists in the past and currently serve as managers and technicians for projects such as ARM. It is this history of collaboration with scientists that inspired the creation of BASC and BEO and made the new facility possible.

The new Barrow facility, although smaller than the old NARL, will serve the needs of modern researchers with first-class laboratories, IT and lodging. It is being designed with input from the Arctic research community at various steps of the process through a series of workshops held over this past year and through ongoing feedback *(http://scifac.arcticscience.org)*. Research in the Arctic capitalizes on the history of collaboration between the Native Inupiat Eskimo people and scientists going back to the first IPY (1881-1883). Local Native people have served in many support capacities for scientists in the past and currently serve as managers and technicians for projects such as ARM. It is this history of collaboration with scientists that inspired the creation of BASC and BEO and made the new facility possible.

The scientific community has expressed significant interest in the new Arctic research facility. The opening of the BGCCRF during the International Polar Year's 125th anniversary will renew America's commitment to cutting edge science support in the Arctic. ❑



Phase I Research/Education Facility

Truth in the Wild: A Great Dad That Wanders Wide

Photo by Bill Garwood

New research about the wolverine, already known for its strength and roaming ability, shows that it moves at about 5 miles per hour whether the terrain is rough or easy.

***The New York Times*, GLACIER NATIONAL PARK, Mont., 12 April 2005, by Jim Robbins**—In the gathering darkness four biologists wearing headlamps surround an unconscious wolverine that is flat on its back, legs akimbo. They check a transmitter implanted in its belly and fit another larger one on a collar around its heavily muscled neck.

Then they inject the animal with the antidote to the drug that knocked it out and place it in a box trap. An hour or so later, when the lid of the trap is opened, the animal clambers out and runs into the forest.

Every two hours the position of the wolverine—known as M-1—is fixed by a geopositioning satellite and recorded in the collar. A few weeks later the wolverine is recaptured, and a record of its travels is downloaded from the collar into a laptop. The result confirms data that the researchers have accumulated over three years. Wolverines are wildly peripatetic.

"The hallmark of the wolverine is its insatiable need to keep moving," said Dr. Jeff Copeland, principle investigator of the research project, and a wildlife biologist at the Rocky Mountain Research Station of the United States Forest Service in Missoula, "I don't know any animal that moves like this every day. Nothing close."

The wolverine, a creature of the northern forests that resembles a small bear, is legendary for its strength and ferocity.

"Picture a weasel," Ernest Seton Thompson, the naturalist, wrote in 1909, "and most of us can do that, for we have met that little demon of destruction, that small atom of insensate courage, that symbol of slaughter, sleeplessness and tireless incredible activity—picture that scrap of demoniac fury, multiply that mite some 50 times, and you have the likeness of a wolverine."

> *The hallmark of the wolverine is its insatiable need to keep moving.*

An Austrian biologist named Peter Krott, who raised wolverines and wrote about them in his 1959 book, *Demon of the North*, said one of his animals, named Rosa, got caught in a leg hold trap and traveled back home on three legs for weeks carrying the steel trap in her jaws, before collapsing on his doorstep.

John Krebs, a biologist in British Columbia who studied wolverines for seven years and is writing up his research, said that in the 1930s a wolverine kept chewing into a log meat locker at a mountain lodge and dragging slabs of meat out. Leg hold traps were set. One day the trapper surprised the wolverine at work. With traps on three legs it was still trying to drag a carcass.

The tales that have accumulated about the animals would have it that one wolverine can pull a moose carcass on its own. Mr. Krebs documented a 35-pound wolverine dragging a mountain goat several kilometers and across a major highway.

"Determined," said Mr. Krebs. "That describes them best." The new research shows a wolverine that seems driven to roam. It keeps on moving at about 5 miles per hour whether the terrain is rough or easy. With broad feet that serve as natural snowshoes, it easily scrambles over 10,000-foot snow-covered mountains, crosses giant scree piles and lopes through lichen-draped forests, sometimes covering 25 miles one day and 25 miles back the next. A male's home range is about 500 square miles, about the same as that of a grizzly bear, which is 10 times its size.

A male covers that huge swath of territory both to mate with three or four females and to rummage in avalanche chutes for the carcasses of moose or mountain goats that have perished, to hunt squirrels and insects or scrounge for

berries. "The things it needs to make a living are scattered so they need that big an area to find what they need," Dr. Copeland said.

"Everyone who studies the animal comes away impressed by it," said wildlife biologist Rick Yates, who works on the study.

Wolverines are very similar to the Tasmanian devil but not related to it and are said to be fearless. "A wolverine can probably hold its own against any other carnivore," Dr. Copeland said. But it seldom fights because "it can probably bluff its way out of any confrontation."

Before it was freed from the trap in Glacier, M-1 growled and woofed as researchers neared the box. When Dr. Copeland, who has never been bitten, cracked the lid, the animal lunged forward snarling and ripped out pieces of the log with its teeth.

Wolverines are also proving to have a family life unusual for carnivores. Males have been known to wait outside a trap for a captured mate. No other young adult carnivores are known to maintain companionship with their doting fathers. But wolverines do.

In Idaho, in the 1990s, Dr. Copeland said, he kept catching a young female wolverine called 203. She couldn't survive on her own and was living on the bait in the trap. The next day Dr. Copeland's wildlife technician called from an aircraft and said, "You're net going to believe this, but little 203 is with Socks."

Socks, with four white feet, was the patriarch wolverine of the area, and probably was 203's father. She would spend two or three days with Socks, then they would split, then come back together for two or three days. "I think he was teaching her to survive," Dr. Copeland said. "It suggests male parental care, which in carnivores is unheard of. But it enhances the kit survival and assures likelihood of passing on his genes."

Wolverines, the largest member of the weasel family, inhabit tundra and high mountain habitat around the globe. They are found throughout Alaska and much of northern Canada, but in the continguous United States their range extends only into the northern Rockies in Montana, Idaho and Wyoming. A few have also been sighted in northern Washington State. Because the animals are so reclusive, population numbers are difficult to estimate, but Dr. Copeland said the population in the Lower 48 is "in the hundreds, not the thousands."

The wolverine has earned names like "devil bear" and was believed by some tribes to be a spirit animal that connected the living and the dead.

Until the 1930s they were found as far south as the Sierra Nevada in California and in Colorado. "Wholesale poisoning probably whacked them," Dr. Copeland said. There are none in Michigan, the Wolverine State, he added.

Because they are secretive and so little is known about the wolverine, humans have filled in the gaps with myth. The wolverine has earned names like "devil bear" and was believed by some tribes to be a spirit animal that connected the living and the dead.

Female wolverines give birth to three or four tiny, helpless, white kits each winter in a multi-chambered den they excavate in the snow in high mountain cirques. They are fiercely protective and work hard in harsh conditions to find enough food to sustain their offspring.

The high country is where wolverines become controversial.

Winter recreation, including backcountry skiing, helicopter skiing and snowmobiling, is a fast growing pastime in the Rockies, and people often invade the redoubts where wolverines make their dens.

"We're seeing increases in winter recreation from people in areas so remote now that never had activity before," said Stephen Hoffman, executive director of the Predator Conservation Alliance, a conservation group in Bozeman, Mont. "Because of the intrusion," Mr. Hoffman said, "they may abandon their den and move their kits."

They are sensitive to intruders. In ones case documented by Mr. Krebs, wolverines abandoned their den because of a heli-skiing operation, in which skiers are dropped by helicopter on remote mountaintops. Dr. Copeland inadvertently caused two wolverines to move their dens during a study by coming too close.

Fragmentation of habitat is also a concern. No one knows how the widely scattered wolverines stay in touch with one another, and there is worry that logging, roads, homes and other developments may cut them off from the rest of the population.

Conservationists have petitioned twice for wolverines to be listed as endangered, concerned that even though little is known about them, decisions are constantly being made governing their well-being.

Montana, for example, still allows trappers to take a dozen wolverines a year even though their numbers are unknown and their fur has little value. There is a small market for wolverines that are mounted by taxidermists. Montana and Alaska are the only states that allow trapping.

While the wolverine's range has shrunk considerably in the last half century, Dr. Copeland argues that at this point there's not enough data to show that the wolverine needs federal protection. "The only scientific answer is, I don't know," he said. "We need information before we understand the needs of the animal and can make that determination." ❑

Grizzly Bears' Polar Foray

***The Washington Post*, 14 March 2005, by Guy Gugliotta**—Geologist John England thought he spotted the bear from a helicopter as he flew over uninhabited Melville Island in Canada's Northwest Territories. It was tall and massive, with a prominent shoulder hump and dark hair on the back of its legs. It looked like a grizzly bear, but it was 600 miles above the Arctic Circle, well north of its usual stamping grounds.

England took photographs but had to wait for definitive proof. The next summer, he found paw prints in the mud on Melville—paws with four inch nails. At a researchers' cabin nearby, he plucked two hairs from a wire and sent them to a lab to British Columbia, where analysts checked the DNA.

The samples came from a male barren-ground grizzly bear, far north of where it ought to have been. And it was making a major encroachment on habitat traditionally claimed by polar bears.

"We know grizzlies go out on the sea to hunt seals, but no one has ever seen one that far north," England said in a news release from the University of Alberta.

The presence of a grizzly bear so far north poses interesting questions about the future of two great predators in what could become a shared habitat, he said. Grizzly bears are formidable animals (an adult male weighs between 300 pounds and 650 pounds) but can be dwarfed by polar bears, the largest land predators in the world (adult males weigh between 860 and 1,320 pounds).

What would the encounter be like? It's an open question. England said polar bears have interbred with their grizzly cousins in captivity. On the other hand, grizzlies have been known to prey on polar bear cubs. ❑

How Foxes in the Aleutian Henhouse Doomed Islands' Plant Life

An Arctic fox carries an auklet, a seabird that breeds in the Aleutian Islands. With the birds' demise on the islands, native grases that depend on their guano have suffered.

***The New York Times*, 29 March 05, by Charles Petit**—Foxes may not graze, but a new scientific study describes how their arrival on Aleutian islands destroyed rich grasslands and left only sparse tundra. The authors of the report, which appeared in *Science* last week, say this transformation shows how an entire ecosystem may go into a tailspin if just one new top carnivore shows up.

The inadvertent experiment began in the late 1700s and continued into the early 20th century as fur traders looking to expand their supply released nonnative Arctic foxes and, in some cases, red foxes on more than 400 Alaskan islands. Some died out, but many populations survived.

The new habitats included much of the Aleutian archipelago that curves west toward Asia. Except for the occasional polar bear rafting in on winter ice, the windswept islands had few predators before.

"The botanical impoverishment that has resulted is the reverse of what usually happens when a new meat-eater comes along.

"Traditionally, the predator eats the grazer; the grazer no longer eats the green stuff; and the habitat gets more green," said Dr. Donald Croll, a professor of biology at the University of California, Santa Cruz, and the lead author of the report.

An example of the more usual routine is in Yellowstone National Park, where returning wolves, preying on sapling-browsing elk and confining the wary survivors to areas where they can see wolves coming, have touched off a resurgence of willow, aspen and other vegetation.

The contrary effect in the Aleutians, once sorted out, has a simple explanation.

The grazers on these islands were grass- and seed-eating Aleutian geese, which are smaller cousins of Canada geese. The foxes drove the geese near extinction, which would have been a boon for grasses except that the foxes also feasted on the eggs and hatchlings of puffins, auklets and other ocean-feeding seabirds they found brooding in vast numbers almost everywhere.

Some islands lost almost all birds except for cliff-nesting species. And as groundnesting birds faded, so did their nutrient-rich excrement, or guano, which had been a natural fertilizer.

The research team concluded that islands with no foxes received an average 361.9 grams per square meter yearly. Fox-infested islands get just 5.7 grams per square meter of guano per year.

"You ever smell one of those rookeries?" Dr. Croll asked. "That is the odor of ammonia, like in fertilizer. Even the wind scatters it around." Without the regular subsidy of nitrogen and potassium-rich nutrients winged in from the sea, grasses lost their competitive edge over tundra shrubs and herbaceous plants.

The origins of the project lie in the patient observations of the paper's fifth author, G. Vernon Byrd, a Fish and Wildlife Service biologist at the Alaska Maritime National Wildlife Refuge. His conceptual advantage was to have been paying attention to one ecosystem for decades.

Despite foxes, the islands remain home to more than 10 million seabirds of 29 species. Mr. Byrd is an avid birder. As a young naval officer in the late 1960s, Mr. Byrd, a North Carolinian, arrived at a base on Adak Island in the Aleutians. He loved a place most sailors abhor.

> *Despite foxes, the islands remain home to more than 10 million seabirds of 29 species.*

When his hitch ended, he asked to be left there. His stunned commander called in a psychiatrist. After his sanity was affirmed, Mr. Byrd recalled, "I walked over to the Fish and Wildlife office and signed up."

The pattern took a while to sink in. He saw what foxes had done to bird populations. He noticed hardly any grass on islands with foxes, but plenty on those without them. While helping to restore the island of Amchitka, the site of early underground nuclear tests, he observed that splotches sprouted where a colleague's torn fertilizer sack had dribbled.

He saw grass thriving around nutrient-rich caribou bones. And guano's fertilizing function is well known. Mr. Byrd got to talking about it all with Dr. James Estes, a visiting ecosystem specialist from the University of California, Santa Cruz. Dr. Estes, in turn, recruited Dr. Croll, who got the formal study organized and added more colleagues.

Every August from 2001 through 2003, the team braved brutal weather, freezing fogs and rocky landings to sample plants and soil on nine islands infested with foxes and on nine that were not. Test plots proved that given some fertilizer, remnant grasses regained their advantage. The numbers left no doubt that the Aleutian foxes had driven down the grasses by indirect guano deprivation.

The birds and grassy expanses should rebound in coming decades. For several years, Mr. Byrd and others in the refuge have been eradicating foxes with traps set along Aleutian shores in late winter and spring when, with birds away from nesting grounds, the hungry animals forage along the beach for crustaceans and washed-up edibles. Several thousand foxes have been eliminated, and 40 islands have been cleared.

One of the cleansed islands is called Rat, which brings up another twist in a neverending battle against alien, bird-eating Aleutian predators. Shipwrecks are not uncommon. When a vessel runs ashore, Fish and Wildlife personnel work as hard to protect the land as they do to protect the sea from their contents. Rodents can ran amok in seabird colonies too or, as Mr. Byrd put it, "rat spills are a lot worse than oil spills in the long term." ❑

Decline of Hardy Alaskan Fur Seals Baffles Experts

***The New York Times*, ST. PAUL, Alaska, 22 February 2005, by Sarah Kershaw**—On a blustery winter afternoon, a dozen male Northern fur seals huddle at a rookery on this island in the Pribilofs off southwestern Alaska. To look at them, aggressively sparring for territory on the rocks, it is hard to imagine that they are at the center of a baffling scientific mystery: why is this storied species beginning to disappear?

These eared, thick-furred and potentially massive seals—mature males can weigh up to 600 pounds—have a long and symbolic place in Alaska's history. Their soft and luxurious fur, the coveted prize during the huge commercial sea harvests that were legal here in the Bering Sea through the early 20th century, was once so valuable it drove Alaska's early economy.

The species rebounded briskly after the aggressive harvests of up to 100,000 seals a year were stopped in 1911; some commercial harvesting was allowed on and off until it was halted in 1984. Starting in the 1950', for reasons that are unclear because the harvests by then tended to be fairly small, the seal population began a slow decline.

And lately they have been in a tailspin, declining at an alarming rate of 6 percent a year since 1998. From a high of more than 2 million in Alaska in 1948, their numbers have fallen to about 1.1 million—750,000 to 800,000 breeding each summer on this and nearby Alaskan islands.

"We don't know why," said Dr. Rolf Ream, a government zoologist with the National Marine Mammal Laboratory, based in Seattle. "We don't have a good grasp. We don't have the data to pinpoint it."

Theories abound. The seals' food supply, including pollock, anchovy, herring, rock fish and hake, may be in shorter supply. Or another species may be preying on the seals—perhaps killer whales, which no longer have as many great whales to eat because of harvesting of those mammals.

So far, no one seems to be attributing the decline to the continuing but strictly controlled native Alaskan subsistence hunting of the seals, a dietary staple of the 800 or so Aleut Alaskans who live here and on nearby St. George, who are permitted to kill fewer than 1,000 juvenile male seals annually by clubbing them to death. Entanglement in fishing nets has also been suggested as a cause, but scientists say they doubt that entanglement alone could account for the recent population decline.

On St. Paul, on a mid-December afternoon, the bull seals tussled playfully, flapping and shoving at each other, the burliest of them already trying to lay claim as beach master" for next summer's breeding season, when this island and St. George will morph into the world's prime breeding ground for this newly threatened species, which gathers, flipper to flipper, on the edges, or haul-outs, of this island's shores.

The female seals, which generally leave the Pribilofs by early November to make their long winter swim to the North Pacific, were gone by then. But at least 39 females had splashed away from St. Paul and St. George with satellite radios glued to their waterproof pelts. Scientists were hoping they would bring back to these shores and seal haul-outs information about the species' decline related to their weight and diet.

The Northern fur seal is showing population patterns similar to the sea lion, which also inhabited the Pribilofs before it almost disappeared and is now listed as an endangered species. That decline, more rapid and more drastic than the fur seals', has also been hard to explain. But with that population slightly stabilizing, researchers say federal funding, little of it earmarked until now for the study of fur seals, will this year become available to examine the cause of the decline of the seals.

Scientists are measuring the fur seal decline by estimating, every other year, the number of pups born here in the Pribilofs, where about 60 percent of the world's Northern fur seals spend their summers breeding and basking at the rookeries, and where females typically give birth within 48 hours of their migration back to the Bering Sea.

One of the challenges for biologists and others is receiving the public attention and the research financing for a species listed under the Marine Mammal Protection Act as "depleted," rather than threatened or endangered. But scientists, conservation officials here on St. Paul and others who met in late January at a conference to discuss the fate of the seal say they are considering asking the federal government to list the Northern fur as endangered.

"One of the problems is in rallying people to the cause is that there are still at least 800,000 seals out there," said Randall H. Hagenstein, director of conservation for the Nature Conservancy's Alaska field office, which helped organize the Pribilof Island Collaborative, the organization that met in January to discuss the status of the seal.

"You can see them and say, 'Oh my gosh, that's a lot of fur seals,'" he said. "But consider that 50 years ago, people could have gone out and seen 2.5 million. It's the memory that doesn't exist."

Meanwhile, scientists mystified by the seals' decline and wary of the experience with the Steller sea lions, whose population plummeted in the late 1970s, say that unless the fur seal decline is quickly understood and stemmed, the seal, too, could become the subject of litigation and debate among environmentalists and the National Marine Fisheries Service like that surrounding the protection of the sea lion.

"We're trying to see if we can find any evidence for a lack of food in either the Bering Sea or the North Pacific," said Dr. Alan M. Springer, an oceanographer at the University of Alaska, Fairbanks, and a lead researchers on the study that placed the satellite transmitters on the female seals in November. "If we can't find any evidence that food is limited, then it would be predation."

Referring to Steller sea lions, harbor seals and even sea otters, all species under threat of major decline, he added: "If they keep going the way they have been and the way these others did, it's something that nobody wants to see repeated. It's got people really nervous." ❑

PHOTO BY JIM WILSON, NEW YORK TIMES

Fur seals huddle on a rookery in the Pribilof Islands. For reasons unknown, their population has been in a steep decline, with about 1.1 million remaining in Alaska.

The Polar Times: 20-40-60 Years Ago

June 1985—Our June issue reported an international gathering at Beardmore Camp, Antarctica, sponsored by the National Science Foundation (NSF). Attending were delegates from the Antarctic Treaty Nations and representatives from developing nations who were challenging the treaty as "unfair" in the halls of the United Nations. The challengers, led by Indonesia, contended that Treaty nations were negotiating or conspiring to divvy up Antarctic oil and mineral resources. (Another article in this issue reported "strong evidence" of oil just off the Antarctic Peninsula.) The non-Treaty delegates advanced the argument that Antarctica should be officially declared as, "common heritage of mankind." As such, no one nation or grouping of nations should have exclusive domain over the continent.

At a special camp erected for this meeting by USN Seabees, the delegates and Treaty reps exchanged unofficial views and received a series of briefings by Treaty experts on the scientific and technological activities underway on the Continent.

The obituary section reported the death of a famous Soviet aviator who held distance records and who, in 1937, flew from Moscow across the North Pole and landed in southern California. Mikhail M. Gromov, with a crew of two, flew a single-engine ANT-25 monoplane 7,100 miles in 62 hours and 17 minutes, ending the journey at San Jacinto, California. Actually, the group flew further south to San Diego but had to turn back north to land because of the intense fog blanketing the southern California coast. Declared a "Hero of the Soviet Union," Gromov commanded an Air Army on the Soviet-German front and, after the WW II, he served as Chief of Test Flights for the Soviet Air Force.

June 1965—Our lead article reports the U.S. Navy's rescue of 18 men from an ice station established four years earlier that had drifted thousands of miles across the Arctic Ocean. Designated Research Station Arlis 2 , this ice island formed by glacial ice and covered with rocks started its journey near Point Barrow and passed nearly over the North Pole and finally began to disintegrate in the warm Atlantic waters between Iceland and Greenland. Arlis 2 was a platter of ice two miles by a mile and a half and about 70 feet thick. It was covered by rocky "hills", piles of boulders some as large as six foot in diameter. From a distance it appeared as if it were land surrounded by ice and many people speculated that ice islands such as Arlis 2 may have played a role in the disputes between Cook and Peary who both claimed discovery of the North Pole. Their claims were both called into question because each reported sighting land far out into the Arctic Ocean where, it was later shown, no land exists.

A distinguished scientist and member of APS, George A. Llano provided his article first printed in the journal *Bioscience* [April 1965] entitled "United States Antarctic Research Program in Biology." This was a comprehensive overview of the biological studies conducted to date under the auspices of the IGY, and it would serve as a splendid resource for anyone researching the history of scientific activities in the southern continent.

A famous Norwegian aviator and polar explorer died at the age of 75. Hjalmar Riiser-Larsen in 1925 led one of the two seaplanes in which Roald Amundsen and Lincoln Ellsworth tried to reach the North Pole. The expedition had to make a forced landing near the Pole, and General Riiser-Larsen piloted the aircraft that eventually brought the entire expedition home. In 1928 he led the unsuccessful expedition that searched for Roald Amundsen, who had disappeared in a balloon over the Arctic Ocean.

June 1945—With WW II drawing to a close, the pages of *The Polar Times* reflected the relaxation of wartime confidentiality and turned to postwar interests, especially in the northern reaches of Canada and Alaska . These interests covered the spectrum of commercial development—oil and minerals—but also reached across to the scientific community where, clearly, there was a pent-up demand for exploration of the Arctic. Big booms were predicted for Alaska, where thousands of veterans were expected to migrate, seeking a new life and occupations in the oil and extracting industries. Others renewed interest in development that would follow the opening of the Northwest Passage, a possibility that loomed closer each year. *The Polar Times* reported on the plans of the famous couple, Evelyn and Vilhjalmur Stefansson, who were organizing an exploratory expedition to "the new frontier," the Arctic. The war was not forgotten—Admiral Richard E. Byrd received the Legion of Merit medal for his confidential wartime exploits mapping South Pacific islands, and on the obituary pages the combat losses of individuals who had participated prewar in Arctic and Antarctic expeditions were sadly reported. Some genuine characters slipped the veil in 1945: C.D. Browser, author of *Fifty Years Below Zero* and who was also called the "King of the Arctic," died at the age of 82. Another member of royalty, the "King of the Seal Killers," Captain Abraham Kean O.B.E., who for all time, was the undisputed champion sealer, died at the age of 91. Captain Kean set a record in 1934, bringing home over 1,000,000 pelts. For 69 years he beat his way through the ice fields in and around Labrador hunting seals. When not hunting, he served His Majesty as Minister of Marine and Fisheries and at one period was inspector of fisheries along the Labrador coast. (One can imagine the uproar today of such a government appointment!)

For those who keep track of minutia, the dues for the APS in 1945 were one dollar per year, which entitled members to receive *The Polar Times* twice yearly. (Ah, the good old days!) ❑

Mystery Photos, Anyone?

In past issues we've printed a few color photos that were uncaptioned and unidentified and have asked members if they could identify the subject or site, whatever it might be. To our surprise, we received many spirited responses via email and, in one case, a member saw the response of a long lost shipmate and ask us for his address.

The thought has occurred that perhaps we could make this a regular feature by asking members to send us treasured photos from their Arctic/Antarctic days that we would print without caption or description and then ask readers to identify the subject matter or location. The reader responses and the correct identification would then be printed in the next issue.

Now, if *The Polar Times* were a government enterprise, we would hire a "Mystery Photo" editor, provide him/her an executive assistant, find them office space commensurate with their weighty responsibilities and hope that they might develop an '05 budget and a five-year plan before Thanksgiving. Alas and alack, no such prospects in sight for a 501C operation, so we'll launch the old fashion way. Send me your photos—by email, if possible—with a brief explanation, to cv195 7@optonline.net. Or snail mail them to Cliff Bekkedahl, 64 Gansett Lane, P.O. Box 2595, Amagansett, NY. 11930. I will return any and all photos if you so request. In receiving your photos, I will assume you grant permission to print them in *The Polar Times*.

Okay, take a few minutes to dig out and share your favorite photos and see if you can stump the APS experts with your mystery site/subject. (Also, if anyone who is sending their pics by email needs a few pointers on how to scan their photos so they are print-quality, please feel free to drop a line to our production editor, Charlotte Sinclaire, at sinclairec@bellsouth.net.) ❑

Photo Courtesy of John Splettstoeser

Find A Home For Your Souvenir Patches

Ever wondered what to do with all those cloth patches you've collected during years of traipsing around the Arctic and Antarctic? A polar parka can accept only so many of them—until one resembles a NASCAR driver, or perhaps a private adventurer skiing across Antarctica with all your sponsors displayed on your clothing.

The day arrived when 45 or so years of collecting patches from Deep Freeze, Antarctic stations, polar vessels, tour ships, sub-Antarctic islands, Greenland, Russia, etc. amounted to more than a bureau drawer could store. The photo at left provides the solution: Find a seamstress with lots of patience to hand-sew them onto a soft blanket, and use it as a bed cover. This one has 115 patches on it—the photo shows only a part—and measures 50 x 60 inches, with polar regions represented by more than 90 percent of the patches. Try it—you'll like it!—as either a bed spread or a wall hanging.—**John Splettstoeser, APS President** ❑

Polar Times Gifting Program

Broadening our audience for *The Polar Times* and increasing awareness of The American Polar Society are priority goals and represent the surest means of increasing our revenues. Just as does every non-profit organization, we face rising costs that have to be offset in order to stay the course, and if we want to make steady, albeit, modest, improvements, then we must find the wherewithal to do so. We believe that gifting membership is one way of achieving our goals and one that benefits the organization and the gifting member. To this end we offer the following gifting options:

Individual gifts

This is nothing new per se; however, it is a reminder that APS membership and The Polar Times makes unique gifts to friend, colleagues or family members. (We would especially like to see more young adults on our roles.) As one wag observed, "A subscription to The Polar Times sure beats the proverbial necktie, a Rap CD or a bottle of aftershave lotion!" See our insert and the revised package for the individual gift. Moreover, file this idea in your holiday gift planner.

Library Gifting

This is an opportunity to add *The Polar Times* to the periodicals section of your local branch library or in a middle or high school library. This would be a multi-year gift, three years per gift, and it would not constitute membership in APS. Rather, it would simply be a subscription to our journal. With each copy provided we would attach an embossed label stating that this is a gift of [donor–described as desired] so that readers know who the benefactor is. (Please check with gifted institutions to ensure they will accept and display our journal.)

Institutional Gifting

Here we see an opportunity to gift *The Polar Times* as a measure of appreciation or support to an institution, such as a hospital/medical facility for extraordinary service rendered or to an assisted-living facility where a member's relative or friend resides. Again, this would be a multi-year gift with appropriate labeling to identify the member donor.

Miscellaneous Gifting

The possibilities are too numerous to list, but there may be any number of institutions or organizations in your area to which you would like to express your appreciation or support (doctor/dentist/accountant/lawyer/therapist and so forth, or perhaps a subscription to their office for their waiting room, etc.) with a multi-year gift of *The Polar Times*. Again, we would ensure that appropriate recognition of the donor would accompany each issue.

Bear in mind that the gifting of APS membership and *The Polar Times* says something about you and also tells the recipient that you respect their interests and intellectual curiousity.

Please review details of our Gifting Program set forth in the insert to this edition of *The Polar Times*, or contact our Membership Chairman , Charles Lagerbom. ❑

Recent History

On 19 June 2005, the *Glacier* restoration project was featured on the History Channel. The show, entitled "Bone Yard," explores our nation's great machines and chronicles their fascinating history. *Glacier* "closed' the show because she made it back from the bone yard and is well on her way to operational readiness.

The Glacier Society, a group of dedicated stalwarts, have struggled for well over seven years now to refurbish and refit this famous icebreaker, and their efforts were deservedly recognized in this television series.

So, if you missed the 19 June airing of this History Channel series, be patient, be alert; it will surely be rerun sometime soon. In the meantime, visit *www.glaciersociety.org* to learn the full story on *Glacier*'s revival and perhaps offer some financial support to this worthy endeavor. ❑

Correction

The byline on the "Polar Books, Briefly Noted" column in our last issue, Jan. 2005, should have read "John Splettstoeser." We apologize for the error. ❑

Book Reviews

Towards the South Pole Aboard the 'Français'

J.B. Charcot
Bluntisham Books/Erskine Press.
2004, 304 pp, $85.

Towards the South Pole Aboard the "Francais" is an extremely enjoyable book, a rare example of an early account of Antarctic exploration in which the leader actually allows himself to show his emotions, not only towards his men, but also to his readers. This makes Charcot a wonderfully frank storyteller and a good companion on a long voyage.

A physician who was himself the son of a famous neuropsychologist, Jean-Baptiste Charcot was a remarkable man. He inherited a considerable fortune and used it to build a three-masted schooner, *Français*, that he originally intended to sail to the Arctic. But when he learned that Otto Nordenskjöld's Swedish South Polar Expedition was missing in Antarctica, Charcot headed south.

Français sailed from France in August 1903, calling in at Buenos Aires on its way to Antarctica. There, Charcot learned that Nordenskjöld and his men had already been rescued, so he decided instead to investigate the west coast of the Antarctic Peninsula.

The English-speaking world has had to wait nearly a century for this translation of the story of the *Français* expedition, Charcot's first to the Antarctic, originally published in Paris in 1906. (The narrative of Charcot's second Antarctic expedition, *The* Pourquoi-Pas? *in the Antarctic*, was translated into English upon publication in 1910.)

Our patience has been very well rewarded, however. *Towards the South Pole* is a handsome book, a facsimile of the original French-language version, with a fluent and very readable translation by A.W. Billinghurst and an excellent introductory biography by Maurice Raraty.

The book contains five maps and an amazing 272 black-and-white photographs—rare is the page without at least one! Many are wonderful, including a shot of an expedition member (perhaps Charcot himself) on his knees in "a deeply personal conversation" with an Adélie penguin.

Writing in diary format, Charcot manages to avoid the pitfalls of many day-by-day narratives, which can be dry recitations of activities, meals and the weather. Instead, Charcot reveals his innermost thoughts, sharing with us the "sublime and deeply felt emotion" he experienced while watching an Antarctic sunset and his overwhelming reaction to hearing the voices of friends and relatives on a phonograph cylinder they had recorded before *Français*' departure. While out on a lone stroll in the "divine radiance" of a moonlit night, he tells us, "Without thinking, I bared my head and prayed."

Charcot even admits to weeping "like a child" (in the privacy of his own cabin) after his beloved *Français* struck a rock and holed herself—though his first response after the impact was "calmly and collectedly" to straighten his cap and button his jacket "to give an impression of composure." (Despite the men's attempts to plug the hole and round-the-clock pumping, the ship continued to flood. Eventually, temporary repairs enabled the expedition to continue to Tierra del Fuego and Buenos Aires, where Charcot sold *Français* to the Argentine government.)

Thoughout *Towards the South Pole*, the impression Charcot gives us of himself is that of a leader who cares deeply about his men—he provided for their comfort as well as he could—but who could also be alarmingly thoughtless and self-centered.

Twice, Charcot tells us, he set off alone on extended walks from the expedition's winter base aboard *Francais*, which was frozen into a sheltered bay on the north coast of Booth Island, a place he named Port Charcot. The bay was so small that the explorers were able to stretch a hawser across its mouth to keep out ice that might otherwise crush their ship.

Charcot's first solo trek took place after "some displays of ill-humour in the wardroom" put the expedition leader in mind to get away on his own. He decided to walk around the northern end of nearby Hovgaard Island:

> *"Once I was out of sight of the ship, I was alone, a tiny dot in all this immensity, vulnerable to the slightest mishap, with only the power of my own will and muscles to get me out of a scrape. I was exhilarated and why not admit it, I was proud to feel exhilarated. I only returned long after nightfall. Some of my comrades had been worried and set off before my return, and from afar I could see their lanterns shining, those feeble red points of light denoting the presence of civilisation...I was affectionately cursed by all and sundry on my return, and was the first to admit that I had been at fault, since I had strictly forbidden these solitary outings, given the dangers of the pack ice and indeed of the whole area."*

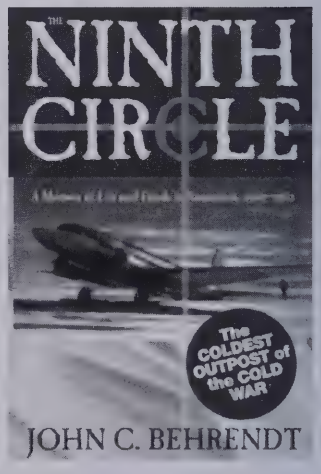
Just three months later, Charcot was again seized with wanderlust while out skiing and again ended up at Hovgaard, this time after crossing very slushy and weak sea ice. Upon his return, again "at a very late hour," the Commandant noted with apparent satisfaction, "Everyone had been very worried..."

Charcot's narrative also drives home the difficulties of operating in the Antarctic in the first decade of the 20th century. By the simple expedient of a motorized boat, the expedition's work would have been far simpler and more efficient! It's difficult to read of the men's pitiful and exhausting struggles to work their whaler through thick pack ice near their ship. At one point they could make progress only by propelling themselves with their hands along the sides of icebergs; another time they worked for two hours to cover just 30 yards.

Like all expeditions of the time, Charcot's men dined on local foods whenever possible. They particularly relished penguin eggs, of which they collected about 8,000. "The penguins," Charcot notes, "who normally only lay two eggs at most, had persistently laid up to eight, but the later ones were becoming smaller and smaller."

Perhaps most interesting to present-day readers of this account is the fact that the Lemaire Channel region Charcot and his men explored is now among the most-visited in Antarctica. More than 20,000 tourists each year ply these same waters aboard luxurious cruise ships, making landings at many of the places where the Frenchmen lived and worked: Port Lockroy, Booth Island, Pléneau Island, Hovgaard Island. For this reason, it would've been nice had the book included a map showing the area with current names, in place of the hard-to-read map of Booth Island (known to Charcot and his men as Ile Booth-Wandel). Also much appreciated would be an index.

Charcot returned home to a hero's welcome from all of France—the only exception being his socialite wife, Jeanne, a granddaughter of Victor Hugo, who divorced him for desertion. Thus, when he ventured to the Antarctic again in 1908 aboard *Pourquoi-Pas?*, Charcot made certain to avoid the same trouble. He asked his new wife, Meg, to sign a prenuptial agreement declaring that she would not oppose his exploration—and she accompanied him as far south as Punta Arenas ❑ ***Reviewed by Jeff Rubin***



The Ninth Circle: A Memoir of Life and Death in Antarctica, 1960-1962

John C. Behrendt
University of New Mexico Press.
2005, 240 pp, $29.95.

The Ninth Circle: A Memoir of Life and Death in Antarctica, 1960-1962 is recommended reading for anyone who knows field work in Antarctica and anyone interested in the state of science there 45 years ago. The author kept copious and interesting notes about his Antarctic experiences, perhaps anticipating that some day they would be compiled

into a book. Indeed, this is his second (following *Innocents on the Ice*) in what might become a series. The notes and diaries are clearly dated and may consist of brief entries if little happened (for example, "9 Jan. Mon. George flew #853 about 140 miles south with the Stanford Group. We saw *The Trouble With Harry* tonight, an excellent Hitchcock film with Shirley MacLaine.").

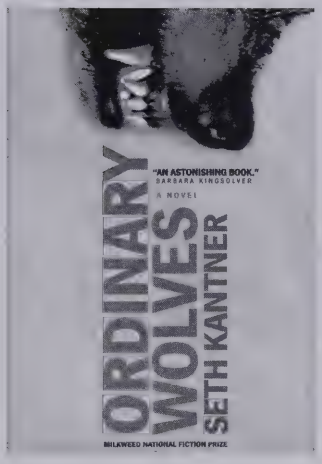
At other times, the entries are more extensive, as in the story vividly told in Chapter One about a near-catastrophe on 22 November 1960 during an exploratory flight from Byrd Station to the Crary Mountains. With flying conditions about as bad as they could get, dense fog and clouds hiding the landscape, the aircraft's starboard wing hit the side of a mountain, causing a dent but not a crash. The magnetometer trailing beneath on a cable dragged along the ground before breaking off. I was at Byrd Station at the time and have a photo of the dented wing. I wondered, as I expect John and others in the plane did, at how lucky they were to get out of a near-death experience. The book's title is appropriate in this sense, the Ninth Circle being the part of Hell that is ice, from *The Divine Comedy*, Volume 1, by Dante Alighieri (look for the quotation on p. v).

At this time in John's life, as a graduate student at the University of Wisconsin, he was to lead expeditions into mostly unknown parts of west Antarctica, including a tracked vehicle (Sno-Cat) traverse from the Jones Mountains to the base of the Antarctic Peninsula, collecting geophysical and other data along the way. The journal notes are supplemented and interspersed with John's comments decades later and make very interesting reading.

In the 1960s, there were many accidents, mainly with aircraft crashes, and loss of human life. John's colleague and good friend, Ed Thiel, was on a 1961 flight in a P2V Neptune from McMurdo to Mirnyy Station and then on to Wilkes for a geophysical survey. When the plane caught fire on takeoff at Wilkes, after the firing of the JATO (jet-assisted takeoff) bottles ignited spilled gasoline inside the aircraft, Thiel and four others burned to death. VX-6, the air squadron operated by the U.S. Navy in Antarctica, had an unfortunate safety record, perhaps due in part to a combination of aircraft (R4D, the Navy version of a DC-3 with skis), aviation gasoline and JATO, as well as dangerous flying conditions and the state of navigational equipment.

John's career in Antarctica continues even to this day, with aeromagnetic surveying and other research, making him one of the few individuals who became involved in Antarctic science starting with the IGY and carried it forward to the present—he's a rare six-decade person!

The book contains more than 50 black-and-white photos, eight maps, and numbered endnotes that relate to each chapter, as well as a short glossary, a bibliography and a good index. ❑ ***Reviewed by John Splettstoesser***



Ordinary Wolves

Seth Kantner
Minneapolis MN: Milkweed Editions.
324 pp., Iñupiaq Glossary.
U.S.$22.00; Cdn$35.95.

People don't often catch me choosing fiction over nonfiction. Our world seems plenty challenging to analysis by expository explanation without having to invent stories about it. Here, however, is an extraordinary, gripping work illustrating why so-called "fiction" may be the medium of choice for an author who sets out to impress his audience deeply.

Let's approach better defining this book after tracing its background. The author's parents co-founded a community of "white Eskimos" in northwestern Alaska in the 1960s and deliberately embraced a subsistence ("living off the land") lifestyle that younger contemporaneous Iñupiat Eskimos were already abandoning headlong by mid-20th Century. Kantner's parents raised Seth and siblings in a hyper-Iñupiaq outpost, or "camp." This is his story of how he matured, left, then returned, following a fling at city life.

Long-time Alaska residents have hoped that the results of this technologic and social experiment would become a matter of public discourse. Before authoring this award-winning book, Seth Kantner pursued writing and journalism courses at the University of Alaska and at the University of Montana. Now that he is bringing results to light, I prefer to regard *Ordinary Wolves* as neither "novel" nor "fiction," but as Seth Kantner's "fictionalized" autobiography. "Fictionalization" simply means disguising the names of people, events and communities in Alaska just enough to allow the author to be ruthlessly honest about his own life experiences without implicating others.

Cast in that light, this becomes a courageous contribution. Consider how many years the Alaska Legislature and other agencies of public policy have wrestled with concepts of "subsistence" without either successfully defining or protecting the concept in public policy. Here, however, the author explores without fanfare what it means to live sparingly on the land within the bounds of renewable resources. In their chosen lifestyle, his hyper-Iñupiaq family finds allies and mentors in Iñupiat elders who remain capable both of living from the land and sharing their ecological knowledge unselfishly. Small wonder that the book's central character would grow up using an extensive lexicon of Iñupiaq terms for natural phenomena, foods, plants and animals (see the Iñupiaq Glossary, in the front matter preceding the Prologue). Also small wonder that he would surreptitiously hope that his own blue eyes and straw-colored hair would darken in emulation of Iñupiaq characteristics so that he would no longer stick out when he grew up.

Equally courageous is Kantner's exploration of how he and his siblings were outcasts in small Iñupiaq communities where they visited periodically to sell his father's art, to place catalog mail-orders and to exchange the kids' lessons by mail with the home-school educators (pp. 44-67). During stopovers at such small villages, Seth and his fictionalized siblings get along variously with their Iñupiat contemporaries. At times they are bullied by the older ones, at other times they all seethe with the mutual attractions of budding sexuality, and at still other times they are seduced by villagers' consumerism-fuelled appetites for snowmachines, which their hyper-Iñupiaq camp upbringing denies them.

Having lived and raised kids in an Iñupiaq community myself, I feel qualified to salute Seth Kantner's achievement with this first book. Kantner's unapologetic writing reminds me how hard it must have been for two of my children to grow up socially differentiated from (if not outcast by) the Iñupiaq majority in our adoptive community.

Ordinary Wolves distinguishes between admiration for individual Iñupiat and uncritical espousal of things Iñupiaq. Honesty and evenhandedness give this account perspective. In a rare glimpse of the author's sense of comic irony, we are treated to the vignette of a family of "evangelistic vegetarians" who raise alfalfa and bean sprouts under battery-powered grow lights. What sustains these displaced Californians in an Iñupiaq village is as mysterious and illogical as their status as "native-worshippers." They abhor such commonplace activities as skinning weasels, hunting, and eating animal protein bathed in seal oil and are quick to applaud the village council's drafting whimsical ordinances denying whites such privileges as owning dogs, hauling firewood and hunting (p. 56).

When Cutuk Hawcly (Kantner's book *persona*) lands for the first time at Anchorage Airport, his bewilderment at rampant consumerism and the artificiality of a city environment smeared across an Alaska peninsula is captured in his stunning word images:

> *The air tasted tired. The ground under the airport had to be holding its breath. I walked, coming to bears standing dead in glass boxes, shot by dentists. Doors were numbered, locked, alarmed, signed with NO. I walked the other way, averted my eyes from the bears, passed a bald eagle perched in glass. Rode electric stairs, arrived at electric glass doors. They opened, pleased*

(CONTINUED ON PAGE 32)

(CONTINUED FROM PAGE 31)

to see anyone go. Who paid the electric bills? (p. 151)

This is an important book, a recommended "must-read" for anyone trying to grasp the complex nature of subsistence resource use in the Arctic or, as the other side of the coin, how easily the subsistence ideal is perverted to grotesque dimensions of excessive consumerism. As such, don't underestimate this piece of literature as a mere northern variant of the U.S. PBS TV series, "Colonial House" or various historical interpretive theme parks such as Plimoth Plantation.

Pleased as I am to read and commend this book, I hope that this will be but the first of a series of commendable books to flow from this young author and his experiences. ❑ ***Reviewed by Dave Norton***

Collapse

by Jared Diamond
Viking (Penguin Books) 2005.

Year after year the great books keep rolling off the presses; some can change your opinions, some may change your outlook, and some make no impact at all. Yet, every once in a while, one comes along that has the potential to change your life.

Collapse is just that, a book that could change your life, especially if you're under forty and predisposed to do something to halt or reverse the seemingly inevitable destruction of the environment, the derailment of global economic development and the final rending of the world's overstressed and tattered social fabric. The changes essential in all dimensions of human existence are daunting, yet doable, and Jared Diamond, the Pulitzer Prize-winning author of *Guns, Germs and Steel*, is the person with the historical perspective, knowledge and boots-on the-ground experience to assess man's past mistakes and apply the lessons learned to those programs that could engineer the changes essential to achieving an acceptable state of survival.

Diamond is Professor of Geography at U.C.L.A and also carries credentials as a physiologist, botanist, biologist and ornithologist to round out his commendable and widely lauded scientific background.

In this book he takes a comparative approach in examining a number of disparate societies, ancient and modern, that have "collapsed" while similar societies under similar circumstances have endured—indeed, prospered. He has devised a set of criteria common to all that can be applied to existing societies in our contemporary first and third worlds. In many cases the comparisons lead to chilling conclusions.

Indeed, none of his projections are cheery but *Collapse* is not another of the doomsday genre that fill the discount at tables at Borders or Barnes and Noble. Professor Diamond takes pains to point out developments and institutions that offer ways out of many of the environmental and societal dilemmas we currently, or soon will, confront. He calls himself "a cautious optimist"and urges readers to support the organizational goals and objectives in government, academia and business that are aimed at avoiding the mistakes and consequences that brought about the collapse of so many once-viable societies.

Diamond takes his readers back in history and into the present and swings all around the globe, focusing on societies of only a few thousand souls to modern-day China, and relates common factors that have sustained or contributed to their rise or fall.

He starts, of all places, in modern-day Montana and, with great personal sadness, describes social, economic and environmental problems of profound importance that are rarely evident to the summer tourist or skiers of Big Sky Country. Deforestation, lack of rainfall sufficient to sustain long-term agriculture, the exodus of young people who can't make a decent living and the results of the depredations of the extraction industries that pose near impossible reversal or mitigation are major factors that make Montana a cameo of other societies that have either collapsed or survived in a radically different modality.

Professor Diamond then takes you north to Iceland (a survivor) and Greenland (collapsed), then to the South Pacific, Latin America, Japan, and China—societies on every continent save Antarctica .

Collapse is a true *tour de force*. It is clearly meant to be, and despite the complexity of the problems it illuminates, Professor Diamond leavens the material with humor and engaging examples that hold the reader's attention throughout.

To take an element from Professor Diamond's criterion wherein he cites deforestation as a major factor in the demise of many societies, the readers of *The Polar Times* could be said to be "old growth" in forestry vernacular. If so, the reviewer's assertion in the opening paragraph that *Collapse* could change your life might be a tad optimistic; but if you pass this book along or gift it to someone a generation (or two) in your wake, then truly, it could become the impetus for changing the reader's life. ❑ ***Reviewed by, Cliff Bekkedahl***

Editors Note: *Why review in the pages of* The Polar Times *a book about how societies choose to fail or succeed? A clever observer would answer, "Well, after all it is a Penguin book." This aside, and while Professor Diamond does not directly address Polar matters, many of the factors he cites as contributing to the collapse of varied societies are clearly in play north of the Arctic circle and, to a lesser degree, south of the Antarctic circle. APS readers of* Collapse *will have no trouble recognizing the realities and relationships.*

Polar Books, Briefly Noted

Australian Antarctic Science: The First 50 Years of ANARE

Australian Antarctic Science: The First 50 Years of ANARE **(Australian Antarctic Division, 2002, 622 pp, $A95)** is a fascinating and detailed map of the fields in which Australian scientists have been active in Antarctic research for the past half-century—and where that work may be headed in the future. ANARE,the Australian National Antarctic Research Expeditions, celebrated its golden anniversary in 1997. As part of that jubilee, 60 Antarctic scientists from around Australia gathered in Hobart for a week-long symposium, delivering papers on topics including atmospheric and space physics; geology and geophysics; terrestrial, aquatic and marine biology; continental and marine glaciology; and oceanography and environmental science. That it took five more years to produce this book is no surprise, for this massive volume—edited by three scientists prominent in their fields, Harvey J. Marchant, Desmond J. Lugg and Patrick G. Quilty—is a goldmine of information and data, a trove so rich that it can only be digested slowly. As with all such compendiums, the book is uneven; as a jargon-loving scientist might put it, there's a great deal of "inter-author variability in readability." Some chapters are little more than long lists of research projects and references, while others are fascinating primers on their disciplines. Especially good are William Budd's chapter on the Antarctic ice sheet and Lugg's chapter on Antarctic medicine, aptly titled "What did happen to all those specimens, Doc?" *Australian Antarctic Science* is the kind of book into which a general reader will dip and skim, much like a storm petrel feeding on zooplankton, catching an interesting tidbit here and there. We learn, for example, that 30 percent of those working in Antarctica show impaired immune responses (p. 74), that krill shrink in starvation—except for their eyeballs (p. 290), and that a wooden hut used by early researchers on Macquarie Island "was no more than a coffin-like box" (p. 275). On the other hand, some 'facts' might require doublechecking: The suggestion that seal liver is poisonous (p.76) does not seem to square with Heroic Age explorers' great enjoyment of seal liver (see "Train Oil and Snotters: Eating Antarctic Wild Foods," *The Polar Times*, Spring-Summer 2002). Each chapter concludes with two very useful features: an extensive review of relevant literature provides a look at where the research has been, while another section lays out possible topics for future investigation. ***—Reviewed by Jeff Rubin***

Edward Wilson's Nature Notebooks

Edward Wilson's Nature Notebooks **(Reardon Publishing, 2004, 168 pp, $39.99)** is a marvelous accumulation of artwork, sketches and illustrations by an artist with a discerning eye and a talented hand. Edited by C.J. Wilson and D.M. Wilson, it presents a much more complete picture of Wilson the artist, in which his polar work—for which he is chiefly known—is just another facet of a notable and talented individual. It's refreshing to see an Antarctic hero covered in a broader context than just his polar exploits. This book attempts to highlight Wilson's place in the pantheon of British wildlife artists and illustrators. As one reads the text and surveys the illustrations and artwork, one can definitely agree with the publishers' premise: Wilson was representative of the "fusion of scientific, cartographic and artistic techniques" defining the burgeoning field of exploration art influenced by the work of Cook expedition artist William Hodges and the landscapes of British master J.M.W. Turner. And though Wilson's life was cut short when he died on the return from the South Pole with Capt. Scott, he had developed into a first-class artist worthy of a place alongside his contemporary wildlife artists Archibald Thorburn and J.G. Millais. This profusely-illustrated book shows the evolution of Wilson's work, with the polar years only briefly represented, further reinforcing the notion that those experiences were just another phase of his artistic history. The book is also available as a special leather boxed edition ($150); visit www.reardon.co.uk ***—Reviewed by Charles H. Lagerbom***

Obituaries

Frederica de Laguna, 98, Arctic Anthropologist, Dies

***New York* Times, 28 November 2004, by Margalit Fox**—Frederica de Laguna, an anthropologist whose work on the history and culture of little-known Arctic civilizations was groundbreaking in the most literal sense of the word, died on Oct. 6 at her home in Haverford, Pa. She was 98.

Her death was announced by Bryn Mawr College, where Dr. de Laguna was the William R. Kenan Jr. professor emeritus of anthropology. She founded the college's anthropology department and taught there from 1938 until her retirement in 1975.

An authority on Alaskan prehistory, Dr. de Laguna was part of the first generation of women to succeed in the rough-and-ready, macho world of early 20th Century field archaeology. She traveled thousands of miles by steamship and skiff, leading expeditions to villages so remote they appeared on no map. There, she contended with—and generally got the better of—bitter cold, frozen ground, ravenous mosquitoes and the rare male colleague foolhardy enough to question her ability.

"I love the actual digging, the rhythmical swing of the arms and the bending and pushing with the whole body," Dr. de Laguna wrote in *Voyage to Greenland* (1977), a memoir of her first field trip, made when she was 22. "The sun shines warmly over my back, the rich, sweet smell of rotted blubber rises from the saturated earth."

In 1975, Dr. de Laguna and Margaret Mead were the first female anthropologists elected to the National Academy of Sciences.

Among Dr. de Laguna's best-known books are *The Archaeology of Cook Inlet* (1934), *The Prehistory of Northern North America As Seen From the Yukon* (1947), *Chugach Prehistory: The Archeology of Prince William Sound, Alaska* (1956) and her three-volume masterwork, *Under Mount Saint Elias: The History and Culture of the Yakutat Tlingit* (1972). She was the subject of a 1997 documentary film, "Reunion Under Mount Saint Elias."

When Dr. de Laguna made her first trip to Alaska, in 1930, Arctic culture was virtually unknown. Victorian explorers had brought back trunkfuls of artifacts, but no scholar before her had studied an Arctic community in depth: unearthing its archaeological record, observing its contemporary life, documenting its language.

"She was really trying to find any possible kind of evidence that could converge to give us the overall history of these peoples," said Regina Darnell, an anthropologist at the University of Western Ontario and a former student of Dr. de Laguna's. "Those early papers are a database that people have worked with ever since."

Frederica Annis Lopez de Leo de Laguna, almost always called Freddy, was born on Oct. 3, 1906, in Ann Arbor, Mich. She grew up in Bryn Mawr, where her parents taught philosophy. She earned a bachelor's degree in economics from Bryn Mawr in 1927 and, in 1933, a doctorate in anthropology from Columbia, where she was one of the last students of the anthropologist Franz Boas.

In 1929, while still a graduate student, she joined a Danish expedition to a tiny island on Greenland's west coast. She planned to stay six weeks. She stayed nearly six months.

"How could I realize the hold which this experience—the free life, the happy, fascinating natives, the absorbing work and the loyal comradeship—has obtained over me," she wrote in a letter home at the end of the trip. "I feel as if I could never be content with ordinary living again, unless it were to be broken by a return to the Arctic. It makes me very sad to know that I have found my ideal vocation in such an inaccessible place."

She was so sure of her vocation and its incompatibility with married life that she broke her engagement to a young mining engineer. She never married and left no immediate survivors.

A WAVE in World War II, Dr. de Laguna also studied the Pima Indians of Arizona. She wrote two mystery novels with anthropological settings, *The Arrow Points to Murder* (1937) and *Fog on the Mountain* (1938).

While Dr. de Laguna's work drew praise from many of the Alaskan Natives whose traditions she explored, she had limited patience with the sensitivities of the multicultural era. In recent years, she was called upon to defend her practice—routine among anthropologists of her generation—of opening the graves of indigenous people and removing their contents for study.

With the passage of the Native American Graves Protection and Repatriation Act in 1990, many of these remains, which had been in museums for decades, were returned for reburial. Dr. de Laguna regretted the loss to scholarship in no uncertain terms.

"Some of our ancestors went to the stake for the right to do science," she told *The Baltimore Sun* in 1997. "Now we have to kowtow to the superstition of these Indians." ❑

Actor John Mills Dies

John Mills, Oscar-winning British actor who played in more than 100 films, including the title role in *Scott of the Antarctic* (1948), died at his home in Buckinghamshire 23 April 2005. He was 97.

Mills, who was knighted by Queen Elizabeth II in 1976, made his name in patriotic films during and after World War II. He had many offers to go to Hollywood, but turned most of them down and made his name in the English movie industry, where he embodied the archetypal British war hero.

Although Mills won an Academy Award in 1971 for his portrayal of a mute village idiot in *Ryan's Daughter*, members of the American Polar Society probably know him best for his portrayal of explorer Robert Falcon Scott.

Mills played the ultimate stiff-upper-lipped hero in this semi-documentary dramatization of the doomed South Pole expedition. The film's visual effects are great and the score is excellent, but the film is ponderous.

Nevertheless, the story of the movie's production is interesting. It required more than two years, with shooting on locations in Antarctica, Norway, and Switzerland.

David James, a surveyor with Britain's 1945-46 winter-over party at Base D at Hope Bay on the Antarctic Peninsula, was hired as the Antarctic advisor for the movie and later wrote a book, *Scott of the Antarctic, the Film and its Production*.

Early on it was decided to send a film crew to Antarctica to get footage that would include wildlife and tabular icebergs. For various reasons it was impossible to send a crew to Ross Island, but the animals and background scenery could be filmed on the Antarctic Peninsula. The film crew departed Stanley for the Antarctic in January 1947 aboard the wood-hulled *HMS Trepassey*, resupplying several British bases en route. During this time the crew filmed at-sea scenes, including icebergs and pack ice.

The film crew was dropped off at Hope Bay, and the ship returned to Stanley. A total of 36 scenes were shot in Antarctica, along with additional material for a British Colonial Office documentary. Although the film was shot in color in order to do justice to the blue and greens of icebergs and pack ice, the Antarctic scenes were also shot in black and white, since it was feared that the color film might deteriorate during the long months in Antarctica.

The film crew shot sledging scenes using extras, since the major actors in the film had not yet been chosen. They also filmed, on an Antarctic glacier, the pivotal scene in which Scott and his four companions first sight the Norwegian tent, thereby learning that Amundsen had beaten them to the Pole. ❑

National Geographic Writer Andrew H. Brown, 92, Dies

***Washington Post*, 10 February 2005, by Yvonne Shinhoster Lamb**—Andrew H. Brown, 92, a retired National Geographic writer, editor and photographer who traveled the far corners of the world from the 1930s until the 1990s reveling in his craft, died of colon cancer Feb. 4 at Montgomery Hospice in Rockville. He lived in Bethesda.

His many adventures included chronicling Adm. Richard E. Byrd's final expedition to Antarctica in 1956 and editing the works of noted scientists Jane Goodall and Dian Fossey as they wrote about their experiences with chimpanzees and mountain gorillas.

Andrew H. Brown chronicled Adm. Richard E. Byrd's last Antarctic expedition and edited Jane Goodall and Dian Fossey.

Mr. Brown wrote 20 articles under his own byline, most illustrated with his own photographs. He relished the dual roles of writer and photographer that many staff members handled in the magazine's early years.

Armed with camera, he traveled 573 miles by snowmobile in the Oregon Cascades to chronicle weather research on snow packs to predict the next summer's potential river flows. In 1950, Mr. Brown paddled 578 miles of remote wilderness rivers in Labrador, Newfoundland, to become one of the few to photograph Labrador's Grand Falls of the Hamilton River, now the Churchill River; at the time, it was North America's second-largest waterfall. Another time, he journeyed six months by ship and icebreaker to explore Antarctica with Byrd.

Mr. Brown savored northern climes, adventure and brook trout. In his articles about life in Nova Scotia, Newfoundland, Ontario, Quebec, Norway, Sweden and Greenland, he captured the faces of life and work in city and forest, from simple country living to the technological transformation from wilderness to modern industrial society.

His greatest skill, said his son, rested in a quiet sense of humor and an inquisitive mind that encouraged strangers to talk candidly of their lives and how they made a living.

Mr. Brown edited more than 100 articles submitted to the magazine by outside writers. He also was on National Geographic's research and exploration committee and helped identify scientists to tell their stories.

Goodall and Fossey were among the experts who trusted his editing and commitment to clear explanation. Mr. Brown edited Goodall's article "New Discoveries Among Africa's Chimpanzees" (1965) and Fossey's "More Years With Mountain Gorillas" (1971)

(Continued on page 34)

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Robert Poole, the magazine's former executive editor and a fishing buddy of Mr. Brown's, said that as an editor, Mr. Brown was involved behind the scenes in one of the Geographic's most famous expeditions, the 1963 mission that put Americans on top of Mount Everest.

"One reason it happened was that Andy had communication with people sponsoring it," Poole said. "Andy pushed for National Geographic involvement. That meant the magazine had not one, but three stories on it."

The expedition resulted in National Geographic's first television documentary. "They had a movie camera on the mountain," said Poole of the 1965 broadcast. "Andy had the wit to see this was good story."

Andrew Hutton Brown was born in New York and graduated from Harvard College in 1934. His career began on the editorial staff of the National Geographic in 1936. Military service during World War II, including a stint with the U.S. Army Weather Service, interrupted his work.

At National Geographic, he worked his way from bulletin writer to writer-editor, joining the masthead on the editorial staff in 1950. In 1956, he was promoted to senior editorial staff, and in 1966 was promoted again to assistant editor. He retired in 1977, but worked part time until 1990.

He and close friends referred to their retirement cubicles at the National Geographic as the "Hall of Fossils, home of proper English and where 'I' is still the best way to begin an action story!"

In later life, Mr. Brown developed an active set of friends with whom he danced, played bridge, dined and traveled.

Survivors include two children, Patricia Church Brown of Bethesda and Andrew Gordon Brown of Silver Spring; and two granddaughters. ❑

Walter R. Seelig, Antarctic Cartographer Dies at 85

Walter R. Seelig, 85, retiree of the National Science Foundation, Office of Polar Programs died April 29, 2005, at Shady Grove Adventist Hospital of pneumonia contracted after a hip fracture.

Walt, born and raised in Brooklyn, NY received a B.S. degree in geology from Brooklyn College in 1940. He started graduate work in 1941 at the University of Nebraska and participated in geological digs during which a new species of giant camel was discovered. In 1941 he relocated to the Washington, DC area to support the war effort by working on maps for the Air Force as an employee of the U.S. Geologic Survey.

In 1959 the National Science Foundation requested Walt to transfer to their Office of Polar Programs to develop and monitor a plan for the mapping of Antarctica. During his 46-year career as a U.S. Government civil servant Walt made seventeen trips to Antarctica. In recognition of Walt's accomplishments, Mount Seelig, the tallest peak in the Whitmore Mountains in Marie Byrd Land, Antarctica, was named in his honor.

In addition to his mapping of the Antarctic he also served as his office's representative in New Zealand for eleven Antarctic seasons. During his years in New Zealand, he was highly regarded as not only a scientific representative but also as an unofficial "ambassador" and who had many friends in New Zealand.

Walt was a "people person" and a docent for 10 years for the U.S. Geological Survey Visitors' Center. He was also a member of the Montgomery Mall 7 a.m. Walkers group.

Walt is survived by his wife, Josephine, who has resided in Montgomery County for over 60 years. They recently celebrated their sixtieth wedding anniversary with family and friends. Other survivors include: two sons, Bill of Rockville, Md. and Harold of Indiana; a daughter, Andrea, who resides in Germany; two grandchildren and a great granddaughter.

In lieu of flowers, gifts may be made to Shady Grove Adventist Hospital, 9901 Medical Center Drive, Rockville, Md. 20850. ❑

Peter Wilkniss, 70

***Anchorage Daily* News, 14 June 2005**—Peter E. Wilkniss, 70, died June 10, 2005, of cancer at home in Anchorage, with his partner, Nora, at his side.

No service is planned. His ashes will be scattered over Cook Inlet.

Born in Berlin in 1934, he earned his Ph.D. in radio-nuclear chemistry before being recruited by the United States as a civilian scientist in the U.S. Navy.

His family wrote: "He traveled the globe, earning an international reputation as a leader in global science issues.

"At the National Science Foundation, he served as director of the international Deep Sea Drilling Program and in the 1980s and 1990s, of the Office of Polar Programs, overseeing all research in the Arctic and Antarctic. He received many awards and honors, including the American Institute of Architects Presidential Citation in 1993 for his work in McMurdo Station, Antarctica. An Antarctic mountain range now bears his name.

"After leaving the National Science Foundation, he moved in 1999 to Anchorage, where he and Nora established a nonprofit institute, the Transnational Arctic and Antarctic Institute, and a polar science and policy company, putting his talents and wisdom to use on behalf of America's Arctic state.

"In the words of author Barry Lopez, writing about the maiden voyage of the U.S. icebreaker RVIB Nathaniel B. Palmer, built under Dr. Wilkniss' watch: 'Peter tried hard to get people to understand the importance of polar science in a world in dire need of better understanding of global climate and the United States' effort to establish international cooperation in the wake of the Cold War. Peter believes in science. ... He is poised to put information together in a striking new fashion. ... He is passionate, disciplined, and someone with a vision.'

"He was completing his memoir/science philosophy, 'The Man Who Went Out in the Cold,' at the time of his death."

He is survived by his companion, Nora Deans; daughter and son-in-law, Sandra and Chris Fall; and granddaughter, Alexandra, all of Chicago; son and daughter-in-law, Peter and Kelly; granddaughters, Ava and Lara, of Pasadena, Calif.; niece and nephew, Petra and Stephan Moosleitner of Germany; and other family members.

Arrangements are with Evergreen Memorial Chapel. ❑

APS Secretary Rotation

Frank Stokes, APS Secretary these many years, has hung up the bunny boots as Secretary and headed for Hawaii for a well-deserved continuation of his retirement.

In the short time that I have known him personally, at the 2003 Symposium and in telephone chats and email correspondence, the impression I got from Frank is that we don't want to let him go; but in reality we won't be, because we can still tap him for his sage advice.

I consider him an "Idea Man" because he raised several points and issues that the membership should consider in the future. Many of you have heard this before, but a tick list includes the following: a serious mission for APS, such as a museum of some sort, educational in nature, and/or an IPY project; an APS website; APS flag (tee-shirts often mentioned by other members as well); a monument of a sort to Americans who have lost their lives while in Antarctica (probably needs a starting date, such as "High Jump") consisting of a wall plaque or some way to be displayed for APS Symposia (an initial step could include such a list in *The Polar Times* as compiled by an avid historian); fund-raising efforts (to pay for some of the above); and the list goes on. I added a few thoughts to Frank's, but you get the idea.

Frank, we will miss you but know you are not far away, enjoying a luau at Diamond Head!

Frank brought to my attention a successor, who has taken over the responsibility as Secretary, Kevin L. Bjella, who is employed at CRREL and lives in Vermont.

Kevin was born in Colorado, did some time in Alaska where he earned a B.S. in Geological Engineering at Fairbanks, worked in his profession, and then became acquainted with ASA and Raytheon and worked at McMurdo in the fire station.

He met his then-future wife during this time, when she was on her 12th season coordinating logistics, and the meeting exceeds any romantic beginning you can think of. Kevin saw her on the loading ramp of a C-5 Galaxy, he proposed to her on Castle Rock, and the rest is history. Their honeymoon was spent working for a full year at South Pole, where Kevin was a carpenter working on the new station, and she operated the HF radio in Comms.

Now at CRREL, his position as Research Civil Engineer involves working on engineering projects in Antarctica for the NSF Office of Polar Programs, with his wife not far away as Office Manager at the Institute of Arctic Studies at Dartmouth College. He is also continuing his education, studying for a M.S. in Arctic Engineering through the University of Alaska. Much like the rest of us, Kevin has an impressive library of polar exploration texts.

Welcome aboard, Kevin! ❑

John Splettstoesser

Membership Letter

Greetings from the American Polar Society Membership Center, here in Maine!

New members are being added almost daily, many of them as giftees of existing members. Others have come on board through word of mouth, through *www.antarcticconnection.com* or through the use of *The Polar Times* card inserts.

We are now able to offer a new gifting program *(see article, p. 29)* which will hopefully provide members a chance to place *The Polar Times* at a variety of locations such as their local library, dentist or doctor's office, school library or veterans hospital. Please take advantage of this attempt to help spread word of the APS.

Some members have contacted the Membership Center with names of colleagues and institutions affiliated with the polar regions. This has been helpful in making ourselves known to those interested and/or involved in the polar world but who might be unaware of the American Polar Society. So, if you have someone or some institution in mind who might be interested in a possible APS membership and for whom a gift membership is not necessarily an option at this time, please contact me with details, and I will send an introductory letter to them, along with a current issue of *The Polar Times*.

It is also exciting that the Membership Center is now able to offer American Polar Society logo patches (4"x4") in addition to Society pins. Patches are $7.50 each or two for $12. Please contact me at the Membership Center or by email at *ampolars@prexar.com*.

I would also like to acknowledge the many members who have updated their mailing addresses. You've been great! Not only will you not miss any of your magazine issues, but providing current contact information such as email addresses also saves the society postage costs. Thank you for your attention to this.

So once again, thank you for your diligence in 1) renewing your memberships in a timely fashion; 2) taking up the challenge and recruiting new members for the society; 3) maintaining updated addresses and points of contact with the Membership Center; and 4) passing along any news clippings, deceased notices and other information for the society. Thank you for all your help. It is a pleasure to be your Membership Chairman. ❑

Charles Lagerbom

Membership Chairman

AMERICAN POLAR SOCIETY Membership is a great gift!

• Read about our new gifting program on page 29 •

American Polar Society Updated Membership Dues, Effective 1 July 2005

Introductory offer for non-members

Gifting One year (U.S.)	$9.00
Gifting two years (U.S.)	$17.50
Gifting one year (foreign)	$10.00
Gifting two year (foreign)	$19.00

Institutional Gifting

Three year gift	$50.00
Three year gift (foreign)	$57.00

APS members

Annual dues U.S.	$15.00
Annual dues (foreign)	$17.00
Four year dues (U.S.)	$50.00
Four year dues (foreign)	$58.00

Other

Library U.S. annual	$20.00
Library (foreign) annual	$22.00
Annual Corporate	100.00
Life Membership (U.S.)	$250.00
Life Membership (foreign)	$275.00

Major Contributors In This Issue

Peter Anderson • Billy-Ace Baker
Peter Barretta Jr. • Nathan J. Frank • Abel Shafer

Moving Target!

For remainder of 2005 Cliff Bekkedahl, Editor can be reached as follows: email: *cv1957@optonline.net*; U.S. Mail: P.O. Box 2595 Amagansett N.Y.,11930, tele., 631-267-7646 ❑

Purpose of APS

"The purpose of the American Polar Society is to bring together people interested in research and exploration in the Arctic and Antarctic; to preserve the record of polar research and exploration; and to support and encourage research and exploration in polar and polar-like regions. Toward these ends, the Society will collect and disseminate information about polar regions; compile written records, oral histories, maps, photographs, film and video, and electronic information relating to polar regions; aid organizers and members of polar expeditions; and maintain contact with scientists, explorers, research institutions and interested parties." ❑

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Byrd Polar Archival Program Sponsors Meeting Oct. 26-28, 2005

The Byrd Polar Research Center and the Byrd Polar Archival Program are sponsoring a meeting October 26-28, 2005 to be held at The Ohio State University in Columbus.

The title of the meeting is "Visions of Our Polar Past and Present: History and Science Moving Forward from the 20th Century".

Special programming will include the exhibit of 60 pastels created by David Paige during the Second Byrd Antarctic Expedition. Society members will receive program and registration information in the mail.

For more details or questions please contact either Laura Kissel (kissel.4@osu.edu, 614-688-8173) or Lynn Lay (lay.1@osu.edu, 614-292-6715). Information will also be posted on the Archival Program's website at *http://library.osu.edu/sites/archives/polar/index.htm.* ❑